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HIV/AIDS & STD

Epi Updates

Bureau of HIV/AIDS, STD & TB
Laboratory Centre for Disease Control
Health Canada

May 1999

Canada

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Information to the readers of Epi Updates

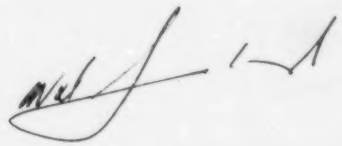
The Bureau of HIV/AIDS, STD and TB of the Laboratory Centre for Disease Control (LCDC), Health Protection Branch (HPB), Health Canada, is pleased to provide you with our latest publication of *Epi Updates*.

As part of its mandate, the Bureau of HIV/AIDS, STD & TB conducts national surveillance and research on the epidemiology and laboratory science related to HIV/AIDS, Sexually Transmitted Disease (STD) and Tuberculosis (TB). To aid in reaching its mandate, *Epi Updates* are compiled to summarize recent trends and developments related to the HIV epidemics in Canada.

To reflect the close relationship between other sexually transmitted diseases and HIV, three *Epi Updates* contain information on reported STDs in Canada. The data is collected from the Division of STD Prevention and Control, Bureau of HIV/AIDS, STD and TB, LCDC, HPB, Health Canada. In the future the Bureau of HIV/AIDS, STD and TB hopes to include *Epi Updates* that focus on the characteristics of the tuberculosis situation in Canada including its interface with the Canadian HIV epidemics.

These publications are complementary to other Bureau materials which are available at our website: www.hc-sc.gc.ca/hpb/lcdc/bah.

Yours sincerely,



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HIV/AIDS & STD

Epi Updates

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Health Canada Santé Canada

HIV/AIDS *Epi Update*

Bureau of HIV/AIDS, STD and TB Update Series
Laboratory Centre for Disease Control

May 1999

AIDS and HIV in Canada

Introduction

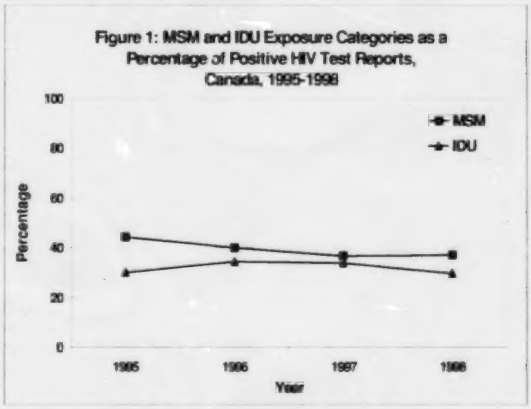
Since the beginning of the epidemic to December 31, 1998, a total of 43,347 positive HIV tests and 16,236 AIDS cases have been reported to the Laboratory Centre for Disease Control (LCDC) at Health Canada from all provinces and territories of Canada. This *Epi Update* summarizes available data on diagnosed HIV infection and reported AIDS cases in Canada, and updates the current information on the status the Canadian HIV/AIDS epidemic.

HIV Positive Test Reports

The annual number of positive HIV tests reported since 1995 has been slowly declining. In fact, 23.3% fewer positive HIV tests were reported to LCDC at the end of 1998 than in 1995. Factors such as who comes forward for testing (testing patterns), risk-reducing strategies, and reporting delays and under-reporting of positive HIV tests may contribute to this observed decline.

Character of the HIV Epidemic Shifting

The HIV epidemic in Canada is changing from the early epidemic that primarily affected men who have sex with men (MSM) and those who received blood and blood products to the current epidemic that primarily affects injection drug users (IDU) and MSM (Figure 1).



Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

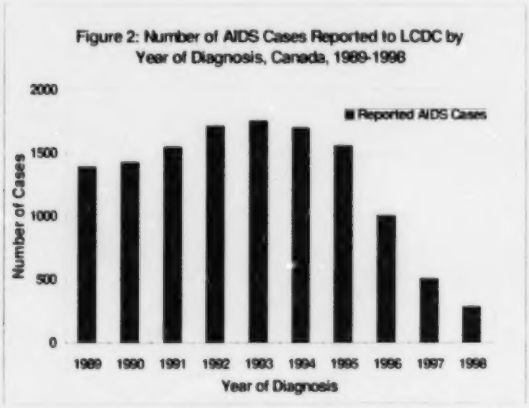
With respect to gender, males and females represent approximately 87.4% and 12.6%, respectively, of the total number of positive HIV test reports with known gender. Between 1995 and 1998, the percentage of positive HIV test reports increased from 19.4% to 22.1% among females, and from 80.6% to 77.9% among males.

Those who present for HIV testing and test positive are only a proportion of the HIV-infected population. At the end of 1996, the Bureau of HIV/AIDS, STD and TB estimated that of the 41,000 Canadians living with HIV, 11,000-17,000 were HIV-infected but unaware of their infection.[1]

Reported AIDS Cases

Since 1993, the number of AIDS cases reported to LCDC has steadily declined. In 1998 the annual

number of reported AIDS cases had dropped by 84.1% compared to 1993 (i.e. 1,751 cases in 1993 to only 279 cases in 1998), marking a dramatic decline in AIDS incidence in Canada (Figure 2).

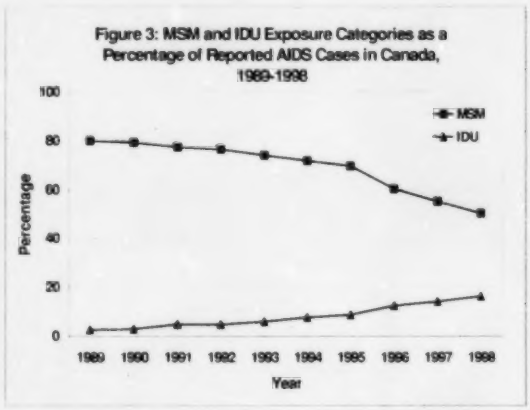


Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

The decrease in the number of AIDS cases over the last few years may be attributed to a number of factors, such as improved treatment and prophylaxis regimens that delay the onset of AIDS, an increase in awareness and education of the risk factors that cause AIDS, and reporting delays and under-reporting of AIDS cases.

The age group that consistently shows the highest percentage of reported AIDS cases (over 40% annually) are those in the 30-39 year age group. Due to the prolonged lag time between HIV infection and the onset of AIDS, these individuals were most likely exposed to HIV in their early 20's. Other noteworthy changes have occurred in the 20 to 29 year age group where between 1989 and 1998 the percentage of reported AIDS cases decreased from 20.5% to 9.0%. Persons aged <15, 15-19, 20-29, 40-49 and 50+ represent only 1.2%, 0.3%, 16.7%, 26.8 and 11.2%, respectively, of the total number of reported AIDS cases.

The exposure category of men who have sex with men (MSM) still represents the majority of the overall AIDS cases (74.4%) even though there has been a decline in the number of reported cases over the last ten years (Figure 3). In 1989, MSM accounted for 79.9% of all reported adult cases of AIDS, and by 1998, 50.2% of all adult cases of AIDS were attributed to this exposure category. At the same time, injection drug use (IDU) has increasingly become an important route of transmission of HIV in Canada. Between 1989 and 1998, IDU among all adult cases of AIDS has increased from 2.5% to 16.0%.



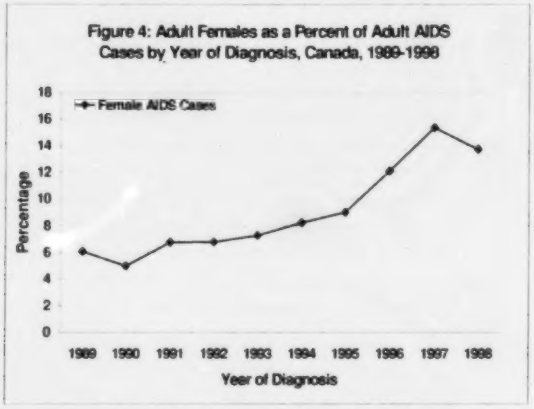
Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

Proportion of AIDS Cases Among Females Increasing

Females now account for 7.5% of the total cumulative reported AIDS cases up to December 31, 1998, and represent an increasing proportion of AIDS cases diagnosed each year among adults (15 years and over) (Figure 4).[2] The majority of reported AIDS cases in females are in the 30-39 year age group, child bearing years, and therefore are at risk of passing the virus on to their newborn children. Even though pediatric cases account for only a small percentage of the total reported AIDS cases, it is important to note that 78.6% of AIDS cases in children (less than 15 years old) came from perinatal transmission.

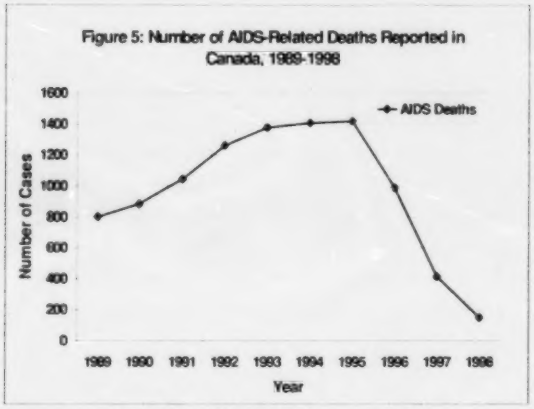
Heterosexual contact with a person at risk represents the highest cumulative percentage distribution (37.9%) among all exposure categories in adult females. However, injection drug use (IDU) category is of increasing concern as it continues to rise since the beginning of the epidemic. Among adult females, IDU accounts for almost 40% of AIDS cases diagnosed and

reported in 1998.



Source: Bureau of HIV/AIDS, STD & TB, LCDC, Health Canada, May 1999.

cases and total AIDS-caused deaths.



Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

AIDS Death Reports

Of the total number of AIDS cases reported to LCDC as of December 31, 1998, 71% (or 11,525 cases) are now deceased (Figure 5). The number of reported AIDS deaths peaked at 1,420 cases in 1995. Since 1995, the number of reported AIDS deaths each year has significantly declined, with a 89.5% drop in reported AIDS cases in 1998 as compared to 1995.

Information on deaths allows the Division of HIV/AIDS Surveillance to estimate the number of persons living with AIDS and the impact of treatment. However, due to reporting delays and under-reporting for both AIDS cases and deaths among AIDS cases, the actual number of persons living with AIDS is not equivalent to the difference between the total of reported AIDS

Comments

Reported HIV and AIDS surveillance data only represent individuals who come forward for HIV-testing and follow-up care. Therefore, the full extent of the HIV epidemic cannot be measured when a large segment of the population may be HIV-infected and not yet diagnosed. The data presented in this report suggests that the HIV/AIDS epidemic in Canada continues to evolve and affect different susceptible populations. To better monitor the shifting epidemic, given the fact that improved treatments are available for HIV infection, more accurate and complete HIV data are required to identify populations at risk, new populations being affected, and hard to reach populations.

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HIV Prevalence and Incidence in Canada: 40,100 Living with HIV Infection and 4,200 New Infections Per Year

Introduction

Estimates of national HIV prevalence and incidence are required to effectively monitor the HIV epidemic at the national level and to help guide and evaluate prevention programs. This report presents national estimates[1] for Canada at the end of 1996 using a technique that combines direct and indirect estimation methods. Note that the estimates in this report have been revised since they were first presented in 1997[2].

Methods

For the direct method, estimates of the number of prevalent and incident HIV infections were derived by multiplying prevalence and incidence rates measured in available epidemiologic studies by estimates of population size. Population size estimates were obtained from census and survey data, and from capture-recapture analysis for injection drug users (IDUs). The direct method was carried out in the cities of Montreal, Toronto, Calgary, Edmonton and Vancouver for each of five exposure categories (homosexual/bisexual men (MSM), IDU, MSM-IDU, high-risk heterosexuals, and recipients of blood/clotting factor). Estimates were then extrapolated from these five cities to their respective provinces and to the rest of Canada based on trends in recent HIV and AIDS diagnoses for each exposure category.

An indirect method was also used to calculate prevalence by dividing the cumulative number of persons diagnosed with HIV infection, less cumulative deaths, by the proportion tested for HIV. The number of persons diagnosed with HIV infection was obtained from provincial HIV testing databases and the proportion of each group tested for HIV was obtained from population surveys and epidemiologic studies. For each category, the mean of the direct and indirect estimates was used as the final point estimate and ranges were calculated using statistical simulation techniques.

Prevalence Results

At the end of 1996, an estimated 40,100 Canadians were living with HIV infection (including those living with AIDS). By exposure category, 25,300 (63.1%) of the prevalent 1996 infections were among MSM, 1,700 (4.2%) among MSM-IDU, 7,100 (17.7%) among IDUs, 5,500 (13.7%) among non-IDU heterosexuals, and 500 (1.3%) among recipients of blood or clotting factor (Table 1).

Incidence Results

During 1996, there were an estimated 4,200 new HIV infections in Canada (Table 2). A total of 1,240 (29.5%) of the new infections were among MSM, 290 (6.9%) among MSM-IDU, 1,970 (46.9%) among IDU, and 700 (16.7%) among heterosexuals.

Table 1: Point estimates and ranges (95% confidence interval) for number of prevalent HIV infections in Canada at the end of 1996, by exposure category and gender

	MSM	MSM-IDU	IDU	Hetero	Blood/Clotting	Total
Men and women	25,300	1,700	7,100	5,500	500	40,100
95% CI	22,500-28,100	1,400-2,100	6,000-8,500	4,400-6,900	430-580	37,100-43,300
Women	0	0	2,000	2,500	100	4,600
95% CI			1,600-2,500	1,900-3,200	85-120	4,000-5,300

Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

Table 2: Point estimates and ranges (95% confidence interval) for number of incident HIV infections in Canada at the end of 1996, by exposure category and gender

	MSM	MSM-IDU	IDU	Hetero	Blood/Clotting	Total
Men and women	1,240	290	1,970	700	0	4,200
95% CI	1,050-1,460	230-370	1,600-2,400	540-910		3,700-4,750
Women	0	0	600	350	0	950
95% CI			460-770	260-475		780-1,150

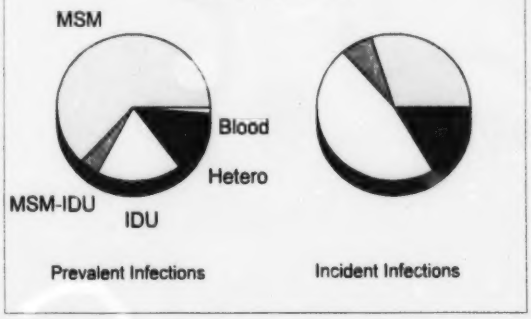
Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

Trends in Exposure Category and Gender among New Infections

Figure 1 shows the differences in exposure category distribution between prevalent infections (those living with HIV infection, many of whom were infected years ago) and incident infections (those newly infected in 1996). There is a clear shift from the predominance of MSM among older, prevalent infections to the predominance of IDU among new incident infections.

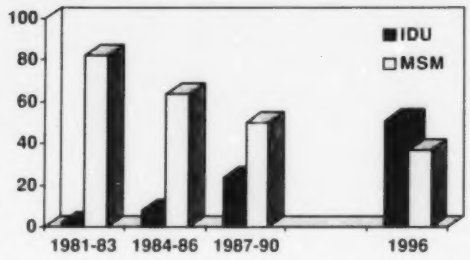
A clearer illustration of this shift in the Canadian HIV epidemic is shown in Figure 2 which depicts the proportion of MSM and IDU among new infections for different time periods. Since the beginning of the HIV epidemic in Canada, there has been a steady decline in the proportion of MSM among new infections, from over 80% during 1981-83 to 29.5% in 1996. Recently, there has been a sharp increase in the proportion of IDU among new infections: from less than 10% before 1986 to 24 % in 1987-90 and to 46.9% in 1996.

Figure 1: Exposure category distributions for prevalent versus incident HIV infections, Canada, 1996 (see text for perecntage values)



Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

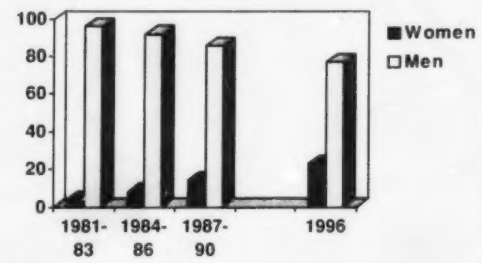
Figure 2: Percentage of IDU and MSM among new HIV infections in Canada, by time period (results before 1996 by back-calculation)



Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

There were an estimated 4,600 women living with HIV infection at the end of 1996 and women were estimated to comprise 22.6% of new HIVinfections in Canada in 1996, an increase from less than 10% before 1986 and 14% in 1987-90 (Figure 3).

Figure 3: Percentage of women and men among new HIV infections in Canada, by time period (results before 1996 by back-calculation)



Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

Comment

The estimated prevalence of 40,100 at the end of 1996 compares to a previous estimate of 32,000-36,000 at the end of 1994. The estimated incidence of 4,200 in 1996 is lower then the estimated peak in annual HIV incidence of about 5,000-6,000 that occurred in the mid-1980s (estimated by back-calculation), but is higher than a previous estimate of 2,500-3,000 per year for the period 1989-94. The majority of this recent increase in HIV infections appears to be occurring among IDUs who now comprise nearly half of all new infections. However, MSM still comprise a significant proportion of new infections and available data also suggest increasing HIV infections among non-IDU heterosexuals (especially women).

This combined procedure makes maximum use of a wide variety of surveillance and research data to estimate HIV prevalence and incidence at the national level. The resulting estimates are necessarily somewhat imprecise, especially for incidence, but the degree of certainty is improved by using different methods and combining them in a type of "triangulation" procedure. Advantages of this procedure are that it is flexible, can readily incorporate new data and serves to highlight gaps in existing knowledge.

The estimates of national HIV prevalence and incidence obtained by this procedure of combined direct and indirect methods clearly illustrates the changing face of the HIV epidemic in Canada and the increasing urgency of the situation among IDU. The results are also useful for planning and evaluation purposes and in Canada have demonstrated the need for continued and improved HIV prevention and care program.

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HIV Testing Among Canadians: 15,000 Current HIV Infections May Not Be Diagnosed

Introduction

This *Epi Update* summarizes available data on the characteristics of persons tested for HIV in Canada and presents our estimate of 15,000 Canadians who were HIV-infected but unaware of their infection at the end of 1996.

Since HIV testing programs became available in 1985, Canadians have been gaining knowledge of their HIV status. Access to HIV testing services has been either through coded or confidential testing at a doctor's office or clinic, or through anonymous testing sites. Knowledge of whether or not one is HIV positive can be useful for several reasons. If the person is found to be HIV infected, consideration can be given to starting antiretroviral therapy. In the case of pregnant women, treatment can reduce the chances that the infant will be infected (from about 25% to 8%)[1]. As well, counselling received at the time of HIV testing can provide information on how to reduce the risk of HIV infection to the individual if HIV negative, and to others if the individual is HIV positive.

From 1985, when testing was instituted, to December 31, 1996, an estimated 39,000 people in Canada had tested positive for HIV[2]. These HIV-positive test data are based on non-nominal, confidential HIV testing information provided by all provinces and territories in Canada, with duplicates tests for the same individual removed to the extent possible. The removal of duplicates is necessary to accurately reflect the number of annual new HIV diagnoses. Duplicate removal rates vary by year, province and type of data (nominal, non-nominal or anonymous), so comparison between these categories is problematic. It is important to note, however, that in most provinces the ability to remove duplicates has improved significantly since 1995. Additionally, data on HIV-positive tests only represent the tested population and do not represent all persons who have been infected with HIV. Further details on the analysis of national HIV-positive test data are given in reference number 2 and in the *Epi Update* entitled "AIDS and HIV in Canada".

Characteristics of Persons Tested for HIV

A Canada-wide survey conducted in January 1997 found that 18.6% of men aged 15 years and older and 16.2% of women aged 15 years and older had been tested for HIV (excluding tests for blood donation and insurance purposes)[3]. Of those tested, 39% had been tested in the year prior to the survey, 57% in the prior two years, and 43% had their most recent test more than two years prior to

the survey. A 1996 survey[4] found that, taking into account ancillary testing such as donating blood or being tested for life-insurance purposes, 41% of men and 31% of women in Canada had ever been tested for HIV.

National surveys of the general population suggest that those who report risk factors are more likely to be tested:

- Among those who had opposite-sex partners, those with two or more partners in the last year were more likely to be tested than those with one partner (50.5% vs 17.4%). Of those who reported having had an STD in the past five years, 58% had been tested compared to 17.4% of those who did not report an STD[3].

- For men, testing was higher among those who had sexual intercourse with another man (71%), used injection drugs (62%), received blood or clotting factor between 1978 and 1985 (27%), or had a partner with a risk factor (IDU, having received blood or clotting factor between 1978 and 1985, from country endemic for HIV) (30%)[4]. For women, testing was higher among those who had received blood or clotting factor between 1978 and 1985 (32%), had a high-risk partner (38%), or had sexual intercourse with a man since 1978 (17%)[4].

- Testing is highest among individuals aged 25 to 34 years[3,4]. Even after taking into account all other risk factors, those aged ≥45 years are still less likely to be tested than are those <45 years[3,4].

- Although those reporting risk factors such as IDU, multiple partners, or MSM are more likely to be tested, a substantial proportion of those reporting risk factors have not been tested recently, or have not been tested at all. For example, among those who report more than one partner in the last year and not using condoms consistently, 53% of men and 38% of women have never been tested.

Estimated Number of HIV-Infected Persons Who Are Uaware of Their Infection

As noted in the Introduction, a total of approximately 39,000 Canadians had tested positive for HIV up to the end of 1996. An estimated 13,000-15,000 individuals of this total had died of AIDS by the end of 1996 (adjusted for reporting delay and under-reporting). Therefore, approximately 24,000-26,000 individuals of this 39,000 total were still alive at the end of 1996.

The Bureau of HIV/AIDS and STD has previously estimated that at the end of 1996, approximately 40,000 Canadians (range 37,000-43,000)[5] were living with HIV infection (including those living with AIDS) (also see *Epi Update* entitled "HIV prevalence and incidence in Canada"). This number includes both those who are aware of their infection (by having tested positive for HIV) and those who are not. The difference between the number alive and HIV-infected (40,000) and the number alive and tested positive for HIV (24,000-26,000) represents an estimate of the number of persons alive and unaware of their infection (not tested positive for HIV). This difference is approximately 15,000 (range 12,000-18,000) or about 30-40% of the estimated 40,000 Canadians (range 37,000-43,000) living with HIV infection at the end of 1996.

Therefore, at the end of 1996, there were an estimated 15,000 HIV-infected persons living in Canada who were not aware of their HIV infection.

Comment

Canadians with risk factors for HIV infection are more likely to have been tested for HIV than those without such risk factors, but there still remains a significant proportion of persons with risk factors who have never been tested for HIV. More needs to be learned about those who are at risk for HIV and yet have not been tested. Furthermore, at the end of 1996, there was an estimated 15,000 HIV-infected Canadians who were unaware of their

infection. Given these data, and the fact that new treatments are available for HIV infection, it is more important than ever that HIV testing be accessible for all Canadians.

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HIV Infection Reporting in Canada

Introduction

As highlighted in the most recent Canadian HIV and AIDS surveillance report, the total number of AIDS cases and the total number of positive HIV tests reported in Canada since the beginning of the epidemic to December 31, 1998 are 16,236 and 43,347, respectively.[1] These numbers give some indication of the magnitude of the HIV/AIDS epidemic in Canada. However, HIV and AIDS surveillance data do not reflect the full extent of the problem as these numbers do not include HIV-infected persons still unaware of their infection. Details on the characteristics of persons tested for HIV are outlined in the May 1998 *Epi Update* entitled "HIV Testing Among Canadians: An Estimated 11,000-17,000 Current HIV Infections May Not Be Diagnosed."[2]

HIV testing patterns within the general population, along with the profile of people being tested, are important for designing and targeting intervention programmes[3], as well as, for developing a context for HIV/AIDS surveillance data. Therefore, it may be useful to: 1) establish a national inventory on where HIV testing is available; 2) describe where HIV infection is reportable and by whom; and 3) update the status of anonymous HIV testing (AHT) within each province/territory. These issues were addressed in a recent survey on HIV testing conducted in early 1998 by the Division of HIV/AIDS Surveillance, Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada. The survey findings on HIV testing in Canada are presented in this *Epi Update*.

Survey Methodology

A survey on HIV reportability, HIV testing, and anonymous HIV testing was distributed to each provincial and territorial representative responsible for HIV/AIDS surveillance. Respondents were then contacted by telephone to follow-up and ensure that the survey was completed and returned. Results of the questionnaire are presented below.

Survey Results: HIV Infection Reportable in 8 Provinces and 2 Territories [4]

A summary of the information regarding HIV infection reportability, as well as the types of HIV testing services offered throughout Canada, is summarized in Table 1.

- HIV infection is legally reportable in all provinces and territories except British Columbia and Quebec. Most of these provinces and territories had HIV reportability legislation in place by the mid- to late-1980s.

- HIV reportability is governed by legislation enacted by each province or territory, and requires that 'nominal/name-based' or 'non-nominal/non-identifying' information about an individual who tests positive for HIV be

forwarded to provincial/territorial public health officials.

- In most testing situations, laboratories and physicians are responsible for reporting HIV infection to the province or territory.

- The type of HIV case reporting (i.e. nominal/name-based or non-nominal/non-identifying) varies across Canada (Table 1).

Table 1: HIV Testing and HIV Reporting by Province/Territory as of January 31, 1999.

Prov Terr	Type of HIV Testing	HIV Infection Reportable[1]	HIV Infection Reportable By:	Level of Reporting to the Prov/Terr
B.C.	N, NN, A	No	N/A	N/A
YK	N, NN	Yes (1995)	P, RN	N
NW	N, NN	Yes (1988)	L, P, RN	N
Alta.	N, NN, A	Yes (1998)	L, P	NN
Sask.	N, NN, A	Yes (1988)	L, P	NN
Man.	NN	Yes (1987)	L, P	NN
Ont.	N, NN, A	Yes (1985)	L, P	N, NN[2]
Que.	N, NN, A	No	N/A	N/A
N.B.	N, NN, A	Yes (1985)	L, P, RN	NN
N.S.	N, NN, A	Yes (1985)	L, P	N
P.E.I	N, NN	Yes (1988)	P, RN	N, NN
Nfld.	N, NN, A	Yes (1987)	L, P	N

Source: Anonymous HIV Testing (AHT) Survey. Division of HIV/AIDS Surveillance, Bureau of HIV/AIDS, STD and TB, LCDC, HPB, Health Canada, 1998 (unpublished data)

A = Anonymous
L = Lab
N = Nominal/Name-Based
N/A = Not Applicable
NN = Non-Nominal/Non-Identifying
P = Physician
RN = Nurse

[1] Refers to legislation governing the type of HIV infection reporting to provincial/territorial health officials and the year it came into effect.

[2] In Ontario, HIV positive data from AHT are reported non-nominally at the provincial level.

Nominal/Name-Based and Non-Nominal/ Non-Identifying HIV Testing

- Nominal/name-based HIV testing is available in all provinces and territories except Manitoba. This service is available by request through all physicians in Canada.

- Non-nominal/non-identifying HIV testing is available in all provinces and territories. Non-nominal HIV testing can be accessed through physicians, community or public health clinics, STD clinics, sexual health units or nursing stations depending on the province/territory.

Anonymous HIV Testing

- Anonymous HIV testing (AHT) is available in 8 provinces. AHT is offered through community or public health clinics, sexual health centres and some physicians.

Table 2: Status of Anonymous HIV Testing by Province/Territory as of January 31, 1999.

Prov Terr	AHT Since[1]	AHT Sites	AHT Data Reported[2]	Counselling Services Available
B.C.	1985	Any Physician	No	Yes
YK	N/A	None	N/A	N/A
NWT	N/A	None	N/A	N/A
Alta.	1992	3	Yes	Yes
Sask.	1993	3	Yes	Yes
Man.	N/A	None	N/A	N/A
Ont.	1992	34	Yes	Yes
Que	1987	60+	No	Yes
N.B.	1998[3]	7	N/A	Yes
N.S.	1994	1	Yes	Yes
P.E.I.	N/A	None	N/A	N/A
Nfld.	**	6	Yes[4]	Yes[4]

Source: Anonymous HIV Testing (AHT) Survey. Division of HIV/AIDS Surveillance, Bureau of HIV/AIDS, STD and TB, LCDC, HPB, Health Canada, 1998 (unpublished data).

** = AHT is available upon request, but are not the official guidelines for the province/territory.

[1] Refers to the availability of AHT in the respective province/territory, and the year in which AHT was implemented.

[2] Refers to whether or not HIV positive test data from AHT is reported to the Division of HIV/AIDS Surveillance, Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada.

[3] AHT in New Brunswick is established as a one year pilot project.

[4] If someone tests positive for HIV through AHT, that individual then becomes part of the nominal/name-based system, where counselling, follow-up care and HIV data reporting are all done nominally.

- Anonymous testing can encourage more people to come forward for HIV testing and

counselling since this practice offers the highest degree of confidentiality (i.e. personal identifiers are not requested or recorded).[5]

- In its first year of operation, AHT sites in Ontario tested approximately 5% of the total tested population, and attracted individuals at high risk of HIV infection, especially men who have sex with men.[6]

- Several studies in the United States have shown that AHT programs encourage people to be tested for HIV, especially those at high-risk or who would not volunteer for testing under nominal/name-based or non-nominal/non-identifying circumstances.[7,8,9]

- Additional information on AHT is highlighted in the *Epi Update* entitled "Anonymous HIV Testing in Canada".[10]

Comments

All provinces and territories in Canada offer at least one form of HIV testing: nominal/name-based, non-nominal/non-identifying and/or anonymous testing. Each province and territory, however, has a different practice for HIV infection reporting. HIV infection is legally reportable in eight provinces and two territories (Table 2). Although, British Columbia and Quebec do not have legislation governing HIV infection reporting, these provinces are still able to collect some data about HIV infection from provincial HIV testing laboratories.

At present, nominal/name-based and non-nominal/non-identifying HIV testing is widely available in Canada. Anonymous HIV testing is available in only eight provinces. Increased availability and accessibility to different types of HIV testing may allow individuals to choose the testing and counselling environment in which they feel most comfortable, encourage more people to be tested, and facilitate the targeting of intervention and treatment programs.[11]

For more information on HIV testing, please contact your provincial or territorial public health department.

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Anonymous HIV Testing in Canada

Introduction

Anonymous HIV testing (AHT) allows individuals to be tested using a unique, non-identifying code known only to the individual being tested.[1] Since the identity of the individual may not be known to the health care provider, only demographic information (i.e. gender, age, ethnicity, city, province) and exposure category most likely associated with HIV transmission are routinely collected.

More important, AHT tends to encourage testing among individuals at high risk and/or who would not necessarily volunteer for testing by nominal or non-nominal methods.[2,3,4,5] Also, AHT encourages pre- and post-test counselling, which may in turn facilitate the partner notification process. To date, there is little or no data available on the characteristics of those who are being tested and counselled at AHT sites across Canada.

Since health initiatives are implemented at the provincial/territorial level, the availability of, and guidelines for AHT in Canada, are determined by each province and territory. AHT is offered in Alberta, British Columbia, New Brunswick, Newfoundland, Nova Scotia, Ontario, Quebec and Saskatchewan. AHT is not offered in Manitoba, Northwest Territories, Prince Edward Island and the Yukon. This update provides information on AHT in Canada, and for the first time, some surveillance data from provincial/territorial AHT programs.

Anonymous HIV Testing: Summary by Province[6]

- AHT is available to all ages with the exception of children less than two years of age. Only Nova Scotia and Newfoundland permit children less than two years of age to be tested anonymously.

- Individuals can either visit an AHT site or their physician to be tested anonymously for HIV.

- Some provinces that offer AHT collect additional patient information from their AHT sites. This information can vary provincially and may include: age, gender, exposure categories most likely associated with HIV transmission, and ethnicity. Table 1 lists some of the variables and associated categories collected by those provinces which offer AHT.

Table 1: Variables and Associated Categories Collected by Anonymous HIV Testing (AHT) Sites in each Province/Territory as of January 31, 1999.

Prov	Variables and Associated Categories Collected		
	Age	Exposure Categories	Ethnicity
B.C.	N/C	N/C	N/C
Alta	Year of Birth	MSM Heterosexual contact IDU[1] Recipient of blood or blood products Occupational exposure NIR	N/C
Sask	Year of Birth	Sex with men Sex with women Multiple partners Partner of person(s) at risk Needle use Recipient of blood or blood product Occupational exposure NIR	Caucasian Black Asian Aboriginal Metis Other
Ont	Year of Birth	MSM Heterosexual contact Needle use Recipient of blood or blood products Child of HIV+ mother NIR	White Black Hispanic Asian Indo-Asian Aboriginal Other
Que	Age Group	Sexual activity without protection Multiple partners Partner of person(s) at risk Needle use Recipient of blood or blood products Occupational exposure NIR	From an endemic country Canadian Other
NB[1]	N/A	N/A	N/A
NS	Year of Birth	Sex with men Sex with women Partner of HIV+ person Needle use Recipient of blood or blood products Occupational exposure NIR	White Black Hispanic Asian Indo Asian Aboriginal Other
Nfld[2]	N/C	N/C	N/C

Source: Anonymous HIV Testing (AHT) Survey, Division of HIV/AIDS Surveillance, Bureau of HIV/AIDS, STD and TB, LCDC, HPB, Health Canada, 1998 (unpublished data).

IDU = Injection Drug Use
MSM = Men who have sex with men
N/A = Not available
N/C = Not collected
NIR = No identified risk

* Endemic countries, as defined by the province of Quebec, include: Angola, Barbados, Burundi, Ivory Coast, Haiti, Jamaica, Nigeria, Dominican Republic, Rwanda, St. Lucia, St. Vincent, Trinidad, Zaire and Zimbabwe;

[1] AHT in New Brunswick is established as a one year pilot project.

[2] Once someone tests positive for HIV through anonymous testing, that individual then becomes part of the nominal system where counselling, follow-up care and HIV data reporting are all done nominally (i.e. by name);

Anonymous HIV Testing Data

AHT has been available in some provinces since 1985; AHT surveillance data, however, are not often systematically reported, or reported separately from non-nominal HIV test data included in national HIV surveillance reports. For the first time, aggregate data on AHT in Canada is presented separately (Table 2). Only a subset of the provinces where AHT is available were able to provide data on this testing method.

Table 2: Aggregate Data Collected from Provincial Anonymous HIV Testing Sites where available between January 1, 1992 and December 31, 1997.

Prov	Year of Test	Total Num. of HIV Tests	Total Num. of HIV+Tests	Rate of Positivity (per 1000 tests)
Alta	1992-97	166	4	24.1
NS	1994	356	3	8.4
	1995	70[1]	3	4.3
	1996	621	7	11.3
	1997	496	3	6.0
Que	1995[1]	5193	48	9.2
	1996[1]	6390	56	8.8
	1997[2]	6390	30	4.7
Ont	1992	9717	203	20.9
	1993	10439	133	12.7
	1994	8895	94	10.6
	1995	11346	123	10.8
	1996	12875	105	8.2
	1997	10288	109	10.6
Sask	1994	1368	1	0.7
	1995	1235	2	1.6
	1996	1344	3	2.2
	1997	1252	5	4.0

Source: Anonymous HIV Testing (AHT) Survey, Division of HIV/AIDS Surveillance, Bureau of HIV/AIDS, STD and TB, LCDC, HPB, Health Canada, 1998 (unpublished data).

[1] Year ending March 31.

[2] Year ending March 31, but data not complete.

Note: Data for B.C., N.B., and Nfld. was not reported by or available for the respective province or territory; AHT is not available for Yukon, N.W.T., Man., and P.E.I.;

- Because of difficulties in removing duplicate tests and obtaining accurate AHT data, the data in Table 2 only represent an overview of AHT, and should be viewed with caution.

- The data alone indicate that some individuals at risk of HIV infection are using AHT as a method for determining and/or possibly confirming their HIV status.

- An evaluation study of AHT in Ontario suggests that AHT provides testing to a population that is not otherwise accessing testing.[7]

AHT and Counselling/Referral Services

In the context of AHT, counselling and referral services take many forms. The different types of counselling and referral services offered at AHT sites are summarized below (Table 3). Data on the number of people who use counselling/referral services are not available.

Table 3: Counselling and Referral Services Offered at AHT Sites by Province where available as of September 1, 1998.[6]

Prov.	Counselling and Referral Services
B.C.	Pre- and Post-Test Counselling
Alta, NB[x], & Nfld	Pre- and Post-Test Counselling Community-Based AIDS Group Medical Services Psychosocial Services
Sask, Ont, & NS	Pre- and Post-Test Counselling Community-Based AIDS Group Outpatient HIV/AIDS Clinic Primary Care Physician Self-Help/Peer Group Alcohol Treatment Drug Treatment
Que	Pre- and Post-Test Counselling Medical Services Psychosocial Services Nutritional Services

Source: Anonymous HIV Testing (AHT) Survey. Division of HIV/AIDS Surveillance, Bureau of HIV/AIDS, STD and TB, LCDC, HPB, Health Canada, 1998 (unpublished data).

AHT and Contact Tracing/Partner Notification

When an HIV test returns positive, the issue of contact tracing or partner notification arises. In Canada, legislation governing partner notification varies from province to province, however, most have adopted informal and voluntary contact tracing/partner notification practices.[4]

Under nominal or non-nominal testing conditions, contact tracing or partner notification is usually the responsibility of the person being tested, although the patient's physician and/or the public health department may provide support and assistance in this process.[9]

With the implementation of AHT, contact tracing or partner notification was initially perceived to be problematic by public health officials and health care providers since the client's identity was unknown. However, with the introduction of pre- and post-HIV test counselling within the anonymous testing environment, partner notification is encouraged as much as it is under nominal and non-nominal testing conditions. To date, data that be used to evaluate the effectiveness of this process are not available.

Comments

Although the debate continues over the merits or additional value derived from AHT, HIV test data (positive and negative) from all AHT sources can complement HIV data from other sources (i.e. nominal, non-nominal and clinical), especially for hard to reach populations and groups at high risk.

More information is needed to determine whether there are significant differences between those who choose anonymous testing and those who are tested by other means. Being able to distinguish between these groups may have implications for the effective planning and implementation of the federal HIV/AIDS program initiatives outlined in *The Canadian Strategy on HIV/AIDS: Moving Forward Together*.[10]

Separate reporting and analysis of positive HIV test data from anonymous testing is needed to enhance HIV surveillance data, and ensure that prevention and treatment programs are actually targeting and reaching the populations at risk.

For more information on AHT, please contact your provincial/territorial public health department.

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Perinatal Transmission of HIV

Introduction

Perinatal (or vertical) transmission of HIV is the transmission of HIV from an HIV-infected pregnant women to her newborn child. Transmission can occur during gestation (in utero), during delivery (when the fetus makes contact with maternal blood and mucosa in the birth canal) or after delivery, through breastmilk. Therefore, women of childbearing age (15-44 years) are of particular importance since they may transmit HIV infection to their newborn children.

In this report the status of perinatal HIV transmission in Canada and the status of HIV testing recommendations for pregnant women are discussed.

AIDS Case Reports

A total of 16 236 AIDS cases had been reported to LCDC to December 31, 1998, including 1 130 cases (7%) among adult women (aged 15 and older). Of these, 891 (79%) were among women aged 15-44, women of childbearing age.

In Canada to December 31, 1998, 181 pediatric AIDS cases (children 0-14 years) were reported, and 147 (81%) were attributed to perinatal transmission.

HIV among Pregnant Women and Women of Childbearing Age

HIV prevalence studies among pregnant women indicate a provincial rate for Canada of about 3-4/10,000, although data for some provinces have not been updated for five or more years. The provincial range is from 1.9/10,000 (Ontario 1991-92[1]) to 8.7/10,000 (Newfoundland 1991-93[2]) and large metropolitan areas have higher rates (4.7 for Vancouver versus 3.4 for the rest of B.C. in 1994[3] and 15.3 for Montreal versus 5.2 for the province of Quebec in 1990[4]). However, even provinces without large metropolitan areas have significant rates (for example, 4.1/10,000 in New Brunswick for 1994-96[5]) and data from Manitoba suggest an increasing trend of HIV infection among women of child-bearing age (from 0.7/10,000 in 1991 to 3.2/10, 000 in 1994-1995[6]).

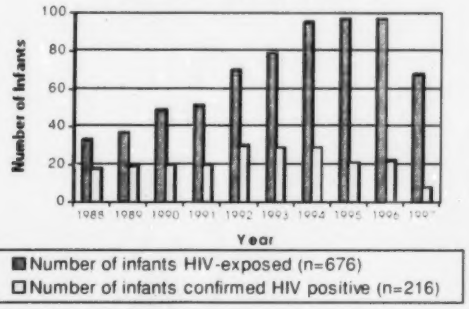
Transmission of HIV from Mother to Child

In Ontario, between 1984 and 1989, there were 34 HIV-infected infants born to HIV-positive mothers; during the period 1990 to January 1997, the number of infants infected vertically from their mothers jumped to 59. Overall, during the period 1984 to January 1997, just over 58% of the HIV-positive pregnant mothers reported their risk factor for HIV as being from an endemic country, where heterosexual transmission of HIV is the most likely mode of transmission[7].

The Canadian Pediatric AIDS Research Group (CPARG) follows HIV-infected pregnant women to monitor the outcomes of their infants. Nationally, over the past decade, the number of infants born to HIV-infected mothers (HIV-exposed infants) has increased steadily[8]. *Figure 1* below depicts the reported number of infants born to HIV positive mothers and the number of infants with confirmed HIV infection.

Of the total reported 676 infants who were exposed to HIV from their mothers between 1988 and 1997, 216 have been confirmed HIV positive and an additional 62 have indeterminate serostatus and are being monitored. Of the exposed infants, over the past decade, an increasing proportion had received some AZT treatment during the course of their gestation and after birth.

Figure 1: Reported Number of Infants Exposed to HIV in Utero and the Number with Confirmed HIV Infection



Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1998.

Provincial Prenatal HIV Screening Recommendations

In all Canadian provinces, HIV testing of pregnant women remains the choice of the woman. However, many provinces have guidelines and/or recommendations for physicians to encourage informed decisions around HIV testing during pregnancy.

Newfoundland: In 1997, the Newfoundland and Labrador Advisory Committee on Infectious Diseases recommended that HIV testing be added to the existing prenatal screening program. HIV testing is done as part of the routine prenatal screen, unless the woman declines. The Newfoundland and Labrador Medical Association and the provincial Public Health Laboratory and Department of Health and Community Services have supported this recommendation and have worked to actively notify physicians and patients of this recommendation[9].

Prince Edward Island: While no formal policy exists, the Chief Medical Officer of Health has recommended that all women who present with risk factors for HIV be tested for HIV. A new program is in development and implementation is expected within one year[10].

Nova Scotia: The Reproductive Care Program recommends that HIV testing should be offered to all pregnant women, together with other prenatal tests in the first trimester. Women who decline testing in the first trimester or who are known to engage in high risk activities should be offered testing again during the latter stages of their pregnancy[11].

New Brunswick: No formal policy for prenatal HIV testing is in place and practices vary across the province. Testing (nominal, non-nominal) and counselling are available through physicians and sexual health centres. Anonymous testing is also available through sexual health centres on a pilot project basis.[12]

Quebec: Since the beginning of 1997, as part of an intervention program on HIV infection and pregnancy, the Ministry of Health and Social Services, in accordance with the College of Physicians, initiated a new program recommending that all pregnant women and women contemplating pregnancy be offered an HIV test[13].

Ontario: On December 1, 1998, the Minister of Health announced that the prenatal screening program would be expanded to include HIV testing. Through this expanded program, all pregnant women are offered an HIV test as part of their prenatal care. The HIV test is performed

only after counselling is provided and informed consent is given. Health providers must complete the laboratory requisition to confirm that these two provisions have been met. Laboratory requisitions not meeting these criteria are not processed[14].

Manitoba: The College of Physicians has issued their "Guidelines to Practice" which include approval of a policy, adopted in 1994, that all physicians offer pre-test counselling and HIV testing, with informed consent, to all pregnant women[15].

Saskatchewan: The College of Physicians issued guidelines for physicians to assess a woman's risk and inform her that testing is available[16].

Alberta: On September 1, 1998, HIV screening was added to the routine prenatal blood tests for all women in Alberta. HIV screening is done unless the woman declines to be tested. Canadian Blood Services laboratories in Calgary and Edmonton do the initial HIV screening on prenatal blood samples received for blood grouping, Rh determination, anti-erythrocyte antibodies and hepatitis B serology. Repeatedly reactive samples are sent for confirmation testing by the Provincial Public Health Laboratories[17].

British Columbia: In June 1994, the B.C. Ministry of Health recommended that HIV testing be offered as a routine prenatal component, with informed consent and pre- and post-test counselling[18].

Northwest Territories: In 1993, the Northwest Territories Maternal and Perinatal Committee, which has representation from the Department of Health and Social Services and the Northwest Territories Medical Association, recommended that all pregnant women be tested for HIV. In 1998, screening for HIV became fully integrated with routine prenatal care, although women are provided the opportunity to opt out[19].

Yukon: In 1994, the Chief Medical Officer of Health, in conjunction with Yukon Communicable Disease Control, "strongly recommended" testing, and when appropriate, repeat HIV testing, of all pregnant women[20].

Canadian Women Can Access Prenatal HIV Screening Programmes

Data from prenatal HIV screening programmes can provide important information on the effectiveness of prenatal HIV screening recommendations. Below are data from several provinces:

Alberta: During the first six months of their programme, of the approximately 29,000 eligible pregnancies, 4.7% declined testing. These data have found five HIV+ women, for a rate of 1.7/10 000. Although this rate is somewhat lower than the rate of 3-5/10 000 found in an anonymous unlinked study in 1994-1995, the current estimate is not a complete sample and is only based on six months of data. It is thought, by provincial officials, to be an underestimate.

In Quebec: Before the initiation of their prenatal HIV screening program in July 1997, it was estimated that about 45% of women were tested during pregnancy. From May 1997 to January 1998, a 22% increase in the number of pregnant women were tested, which represents about 75% of the births recorded during that time period. Between July 1997 and May 1998, 15 pregnant women were identified as HIV+[21].

Manitoba: By comparing laboratory requisitions for HIV serology and requisitions for routine prenatal tests, the provincial public health laboratory estimates that the proportion of pregnant women tested for HIV during pregnancy has increased dramatically in recent years, from about 10% of pregnant women screened for HIV in 1996, to 37% in 1997 and to 45% in 1998. Preliminary data for 1999 suggest that the upward trend will continue. The rate of HIV+ women identified through prenatal screening increased from 2.1/10 000 in 1997/1998 (3 HIV+/14,193 pregnancies) to 5.51/10 000 (8/14,526) in 1998/1999[22].

Antiretroviral Treatment Can Reduce the Likelihood of Transmission of HIV from Mother to Infant During Pregnancy

HIV testing during pregnancy can provide the opportunity to offer antiretroviral treatment to the mother and infant. For example, a full AZT protocol, which includes administering AZT to the mother during the second or third trimester, during labour and delivery, and after delivery to the infant for 6 weeks can reduce the likelihood of transmission of HIV from mother to newborn by about 2/3[23]. Clinical trials in developing countries have recently shown that short course AZT regimes (given to pregnant women starting at 36 weeks gestation and during labour) can reduce vertical transmission rates by about 50%[24].

In B.C., between 1993 and 1996, the use of antiretroviral therapy (AZT) reduced the likelihood of HIV transmission from mother to infant from 22% transmission among mother-infant pairs who had not received any AZT, to 14% for mother-infant pairs who had received some AZT therapy and 5% among those who received the full AZT protocol [25]. Similarly, a study at Sainte Justine's Hospital in Montreal found a reduction in the HIV vertical transmission rate from 28.3% in untreated women-infant pairs 3.75% in AZT-treated pairs[26].

Canadian Prenatal HIV Screening Programmes Are Valuable

Screening pregnant women for HIV clearly represents an important opportunity to prevent the transmission of HIV to infants. From the perspective of a cost-benefit analysis (which includes the costs of screening tests, counselling and treatment), the benefit of screening is obviously greater in areas with higher HIV prevalence among child-bearing women. For areas of lower HIV prevalence, the benefit per unit cost is more dependent on variables such as whether physicians bill separately for the counselling time associated with prenatal HIV testing[27]. It is estimated that if such programs screened 90% of pregnant women across Canada, there would be a 65% reduction in the number of HIV-infected newborns (compared to no prenatal testing and assuming 25% of untreated pregnancies and 6% of treated pregnancies result in HIV-infected infants)[28]. Assuming HIV prevalence rates of 6/10,000 among pregnant women in BC, Ontario and Quebec and 3/10,000 elsewhere, this reduction in absolute number terms would be from 48 to17 infected newborns, or 31 infections prevented annually.

Comments

There is still a risk for the perinatal transmission of HIV in Canada and as more women are becoming infected, this risk is increasing. Elsewhere we have estimated that approximately 15,000 Canadians (including women) are HIV-infected but unaware of their infection (see *Epi Update* entitled "HIV Prevalence and Incidence in Canada"). Given this, and the fact that perinatal infections are preventable, it is important that all pregnant women, and women considering pregnancy, should have access to prenatal care that includes the offer of HIV testing as well as appropriate counselling and care.

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May 1999

HIV and AIDS Among Adolescents in Canada

Introduction

Although adolescents, those aged 10 to 19 years, currently constitute a small proportion of the total number of reported HIV and AIDS cases in Canada,[1] they are a group that could experience an increase in HIV infection and thus merit greater attention from the public health community. This report updates the current information on the status of HIV and AIDS among adolescents in Canada. HIV risk behaviours among this population are particularly highlighted.

AIDS Data[1]

- As of December 31, 1998, a total of 16,236 AIDS cases had been reported to the Laboratory Centre for Disease Control (LCDC). Of these, 78 (0.5%) had been diagnosed among adolescents (those aged 10 to 19 years), and 2,704 (16.7%) had been diagnosed among young adults (those aged 20 to 29 years). Given the median length of time between HIV infection and the onset of AIDS (ten years or more), many individuals in the latter group could well have been infected as teenagers.

- As seen in Table 1, mode of infection varied by age among adolescents with AIDS. Exposure to infected blood or blood products accounted for most reported AIDS cases among those aged 10 to 14 years. In contrast, exposure categories among older adolescents (those aged 15 to 19 years) were more similar to those reported among adults with AIDS.

Table 1: Number of AIDS Cases with Associated Exposure Categories (%) for Individuals 10 to 19 Years of Age in Canada, Diagnosed up to December 31, 1998.

Category	10 -14 years of age	15-19 years of age
Number of Cases	22	56
Percentage of all reported AIDS cases	0.1%	0.4%
Associated Exposure Categories[1]	95% Blood & Blood Products 5% Perinatal	60% Blood & Blood Products 16% MSM 11% Heterosexual Contact 5% IDU 5% MSM/IDU

Source: HIV and AIDS in Canada: Surveillance Report to December 31, 1998. Division of HIV/AIDS Surveillance, Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, April 1999.
IDU = Injection Drug Use MSM = Men who have sex with men
[1]Percentages based on the total number of cases minus those reports for which exposure category was unknown.

HIV Testing Data[1]

- As of the end of December 1998, 43,347 positive HIV tests had been reported to LCDC. Of these, 563, or 1.5%, were among adolescents aged 15 to 19 years, and 630, or

1.6%, were among younger adolescents and children (<15 years of age).

- As with reported AIDS cases, mode of infection varied by age among adolescents with laboratory positive HIV tests. Perinatal transmission and exposure to infected blood and blood products accounted for over 90% of positive HIV tests in those less than 15 years of age. In contrast, MSM, MSM/IDU, and heterosexual contact accounted for 70% of positive tests in adolescents aged 15 to 19 years. IDU accounted for a further 15% of positive tests in this age group.

Table 2: Number of Positive HIV Tests with Associated Exposure Categories (%) for Individuals 19 Years of Age and Under in Canada, Reported up to December 31, 1998.

Category	< 15 years of age	15-19 years of age
Number of Cases	630	563
Percentage of all reported positive HIV tests	1.6%	1.5%
Associated Exposure Categories[1]	69% Perinatal 26% Blood & Blood Products	40% MSM 24% Heterosexual Contact 15% IDU 6% Blood & Blood Products 6% MSM/IDU

Source: HIV and AIDS in Canada: Surveillance Report to December 31, 1998. Division of HIV/AIDS Surveillance, Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, April 1999.
IDU = Injection Drug Use MSM = Men who have sex with men
[1]Percentages based on the total number of cases minus those reports for which exposure category was unknown.

HIV Prevalence and Incidence Data

HIV prevalence and incidence information, in conjunction with AIDS surveillance data, are more useful than are AIDS data alone for depicting the current magnitude of the HIV epidemic in various subgroups of the population.[2] To date, only a limited number of studies have examined HIV prevalence or incidence among Canadian youth.

While data from these investigations suggest that the prevalence of HIV infection is low among adolescents, these data also highlight the fact the virus is not just confined to marginalized groups, such as street youth.

- In a survey of attendees of STD clinics in Ontario (1992), an HIV prevalence rate of 0.1% was found among 15 to 19 year old males.[3] The prevalence rate among females in this age group was 0.04%.[3] Studies of young offenders aged 12 to 19 years in British Columbia (1994),[4] and of street youth aged 14 to 24 years in Montreal (1996)[5] and Toronto (1991),[6] found prevalence rates of 0.25%, 1.8%, and 2.3% respectively. The SurvIDU Network Study (1995-98) reported a prevalence of 0.5% among injection drug users who were less than 20 years of age.[7]

- Sentinel hospital surveillance of HIV infection in Quebec (early 1990s),[8] a study of women seeking prenatal care in British Columbia (1989-94),[9] and a survey of youth from across Canada involved in an international exchange program (1990-95)[10] reported prevalence rates of 0.04% to 0.08% among young people aged 14 to 25 years.

- HIV prevalence rates of 0.0% among those less than 20 years of age have been reported in a study of outpatient specimens in British Columbia (1993),[11] in surveys of women seeking abortions in Montreal[12] and in the Quebec City Region (early to mid 1990s),[13] and in antenatal surveys conducted in Newfoundland[14] and New Brunswick[15] (both in 1995-96). It should be noted that these latter studies involved relatively small, non-representative samples of youth, and, thus, a 0.0% HIV prevalence rate is not necessarily reassuring.

Risk Behaviour Data

The results of provincial school-based surveys suggest that many Canadian youth are at risk for HIV infection through unprotected sexual intercourse with one or more partners.

- In a B.C. study conducted in 1992, among students in grades 7 to 12 (aged 12 to 18 years), 33% of boys and 28% of girls reported ever having sexual intercourse.[16] Of these, 30% of boys and 24% of girls had four or more partners during their lifetime, and only 64% of boys and 53% of girls reported using a condom on their most recent occasion of sexual intercourse.

- In a Nova Scotia survey (1996), among grade 10 and 12 students, 49% reported having had sexual intercourse in the 12 months prior to the survey, and 20% had three or more partners during this time.[17] Of those who were sexually active, 15% of grade 10 and 25% of grade 12 students reported that they never used condoms.

Street youth appear to be at even greater risk of HIV infection because of their sexual behaviours.

- In a 1993 survey among Ottawa street youth aged 15 to 20 years, 94% reported ever having had sexual intercourse.[18] Of those who were sexually active, 21% of boys and 26% of girls had had four or more partners in the year prior to being surveyed, and only 27% of boys and 8% of girls reported that they always used condoms.

The extent of inconsistent condom use among adolescents is further captured in pregnancy rates among those aged 15 to 19 years and in rates of other sexually transmitted diseases among this age group.

- The pregnancy rate in young women aged 15 to 19 years in Canada increased from 41.1/1000 in 1987 to 48.8/1000 in 1994.[19] This latter rate represents a total of 46,800 pregnancies in 1994 in this age group.

- In 1995, 70% of all reported cases of chlamydia and 51% of all reported cases of gonorrhea in Canada occurred among individuals aged 15 to 24 years.[20] In that year, the reported incidence of chlamydia was highest among females aged 15 to 19 years (1,109/100,000). The reported incidence of gonorrhea was also highest among this group of young women (87.8/100,000).

Research reveals that levels of injection drug use and injection risk behaviours among adolescents require ongoing assessment.

- A recent study of street youth in Montreal[21] found that 46% had injected drugs in their lifetime. Of these, 52% had borrowed a used needle to inject themselves on at least one occasion. Also alarming was the incidence of injection drug use in this cohort of street youth, estimated to be 10.3 per 100 person-years.[23]

- In the ongoing Ontario Student Drug Use Survey, the proportion of sampled students reporting needle sharing in the previous year has remained below 0.5%. Although small, this percentage represents approximately 2,000 Ontario students in 1997 who were potentially exposed to HIV because they injected drugs with a needle that had been used by someone else.[22]

Comments

HIV/AIDS are affecting many subgroups of the Canadian population, including adolescents. Although limited available data suggest that the prevalence of HIV infection among youth is currently low, sexual behavior data clearly indicate that the virus could become more widespread among adolescents. Better AIDS and HIV testing data are needed for those aged 10 to 19 years, as are incidence and prevalence information and trend data on HIV-related risk behaviours, in order to guide and evaluate prevention programs for youth. The evidence clearly shows that "user-friendly" programs that combine HIV prevention with the prevention of other STDs, teenage pregnancy, and substance use should be designed and implemented for various youth target groups.[2,22]

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HIV and AIDS Among Women in Canada

Introduction

The HIV/AIDS epidemic in Canada was initially concentrated among men who have sex with men (MSM). Since the mid 1980s, HIV/AIDS has increasingly affected other groups such as injection drug users (IDUs), male heterosexuals and women. The HIV epidemic among women is of particular concern because of the potential for transmission to their infants. This report updates the status of HIV and AIDS among women in Canada.

AIDS among Women[1]

Of the 16 236 AIDS cases reported in Canada up to December 31, 1998, 1 218 (7.5%) were among women: 1,130 among adult women aged 15 years and over, and 88 among female children less than 15 years old. Reported numbers of AIDS cases adjusted for reporting delay are available up to the end of 1997. These data show that the total number of AIDS cases among adult women has increased from an average of less than 10 cases per year in the early 1980s to an average of 143 cases per year in 1995-97.

In addition, the proportion of AIDS cases among women has increased over time, particularly recently, from 6.3% of all AIDS cases before 1990, to 7.0% during 1990-1995, and 13% in 1996-98. The proportion of female AIDS cases attributed to injection drug use continues to increase, from 6.4% of AIDS case among women attributed to IDU before 1990, to 20% during 1990-95, and 28% in 1996-98.

HIV infected pregnant women can transmit HIV to their infant. As of December 31, 1998, 145/181 (81%) of pediatric AIDS cases (among children 0-14 years of age) had been attributed to perinatal transmission. The *Epi Update* "Perinatal Transmission of HIV" discusses the status of perinatal HIV transmission in Canada.

HIV Testing Programs Provide Valuable Information about Women[2]

While AIDS data provide information on HIV infections that occurred about 10 years in the past, HIV data provide a picture of more recent infections.

Data from provincial HIV testing programs in B.C. and Ontario indicate that among individuals testing newly positive for HIV, an increasing percentage are women. For example, in Ontario, about 8% of new positive test reports prior to 1995 were among women, and this increased to 16% in 1995, 17% in 1996 and 20% in 1997. In B.C., women represented about 8% of all positive reports prior to 1995, 22% in 1995, 23.4% in 1196 and 19% in 1997. Although such data only partly reflect trends in new infections, they nonetheless suggest increasing infections among women in these two provinces.

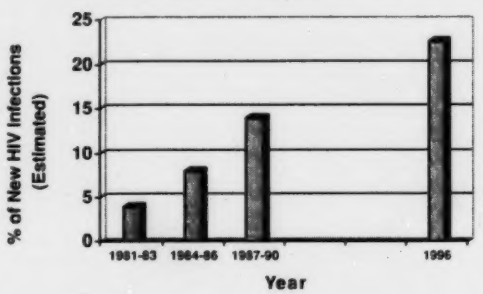
Nationally, before 1995, women represented 9%

of all positive HIV test reports that included gender identification. During 1995, this proportion doubled to 19% of all positive HIV test reports. Injection drug use as a risk factor accounted for 10.5% of new positive reports among women before 1995, and 20.5% in 1995.

HIV Data Suggest Increasing Infection among Canadian Women

Using data from HIV serodiagnostic databases, epidemiologic studies, and behavioural surveys, the Bureau of HIV/AIDS, STD & TB estimates that by the end of 1996, 37,000-43,000 Canadians were living with HIV, including an estimated 4,600 women. The estimated proportion of women among new HIV infections has increased steadily over time[3] (Figure 1).

Figure 1: Estimated Proportion of Women among New HIV Infections



Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

Women Can Access Perinatal HIV Screening in Canada

In all Canadian provinces, HIV testing of pregnant women remains the choice of the woman. However, many provinces have guidelines and/or recommendations for physicians to encourage informed decisions in terms of HIV testing during pregnancy. The "Perinatal Transmission of HIV" *Epi Update* discusses the various provincial programmes and presents data from some of these programmes.

HIV among Pregnant Women and Women of Childbearing Age: Not Only in Large Metropolitan Centres

HIV prevalence studies among pregnant women indicate a rate for Canada of about 3-4/10,000. Provincial rates have ranged from 1.9/10,000 (Ontario 1991-92[4]) to 8.7/10,000 (Newfoundland 1991-93[5]) and large metropolitan areas have higher rates (4.7 for Vancouver versus 3.4 for the rest of B.C. in 1994[6] and 15.3 for Montreal versus 5.2 for the province of Quebec in 1990[7]). However, even provinces without large metropolitan areas can have significant rates (for example, 4.1/10,000 in New Brunswick for 1994-96[8]) and data from Manitoba suggest an increasing trend of HIV infection among women of childbearing age (from 0.7/10,000 in 1991 to 3.2/10, 000 in 1994-1995[9]).

HIV/AIDS Mortality Rising among Canadian Women[10]

In Canada, age-specific death rates for women aged 25-44 with HIV/AIDS have risen from 0.4/100,000 in 1987 to 1.9/100 000 in 1994. HIV/AIDS mortality among women aged 25-44 appears to be approaching the levels associated with other leading causes of death in this age group, such as heart disease (2.37/100,000 in 1994) and lung cancer (3.18/100,000 in 1994).

Comment

Canadian women are increasingly becoming infected with HIV, especially those who use injection drugs and whose sexual partners are at increased risk for HIV. Pregnant women are at risk for transmitting HIV to their unborn children.

Detecting HIV infection before or during early pregnancy can reduce the likelihood of vertical transmission of HIV (from mother to infant) significantly if the woman and her child are offered timely antiretroviral treatment.

All women, and especially women of childbearing age, should have access to HIV testing,

counselling and care. Better data on the trends, risk factors and geographic shifts of HIV among Canadian women are needed to help target prevention and care programs.

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AIDS and Ethnicity in Canada

Introduction

Since the beginning of the HIV/AIDS epidemic, many physicians have routinely collected information on the ethnicity of AIDS-diagnosed individuals in Canada. While this information has been collected and reported to the respective District or Regional Medical Health Officer, it has not been widely reported at the national level due to the sensitive nature and uncertain validity of the data. Although some ethnicity-based analyses have focused on Aboriginal people in Canada,[1,2,3] reported ethnicity data are not included as a regular component of the HIV/AIDS surveillance reports produced by the Bureau of HIV/AIDS, STD and TB.

With an increasing number of requests for information regarding ethnicity of HIV and AIDS case reports, this report summarizes the ethnicity component of reported AIDS cases in Canada. These data were obtained from *HIV and AIDS in Canada: Surveillance Report to December 31, 1998.*[4]

Ethnicity Data for Reported AIDS Cases

Of the 16,236 cumulative AIDS diagnoses reported to December 31, 1998, 78.6% have reported ethnicity information. When examining the total number of AIDS cases reported with ethnicity data in Canada since the beginning of the epidemic, 86.4% of the reported AIDS cases have been reported among Whites. Persons reporting Black, Aboriginal, Arab/West & South Asian, Asian and Latin American as their ethnic background represented only 6.8%, 2.5%, 1.5%, 1.5% and 1.3%, respectively, of the total number of AIDS cases reported with ethnicity data (Table 1).

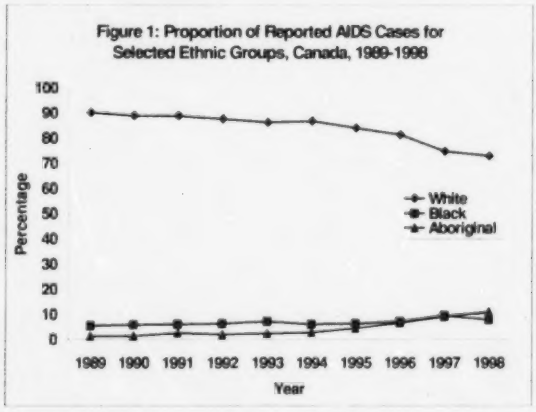
Reported AIDS Cases Declining Unequally Across Ethnic Groups

Since 1993, the annual number of reported AIDS cases has declined. This annual decline is reflected across all ethnic categories, although not equally (Table 1). The most notable decline is among Whites, where 88.9% fewer AIDS cases were reported in 1998 relative to 1993. In 1998, 85.1%, 81.5%, 78.9% and 69.6% fewer cases of AIDS were reported than in 1993, among Blacks, Latin Americans, Asians and Arab/West & South Asians, respectively. Persons reported to be Aboriginal have shown the smallest decline in the annual number of reported AIDS cases since 1993. Among Aboriginals, only a 36.3% decline in the annual number of reported AIDS cases occurred in 1998 relative to 1993.

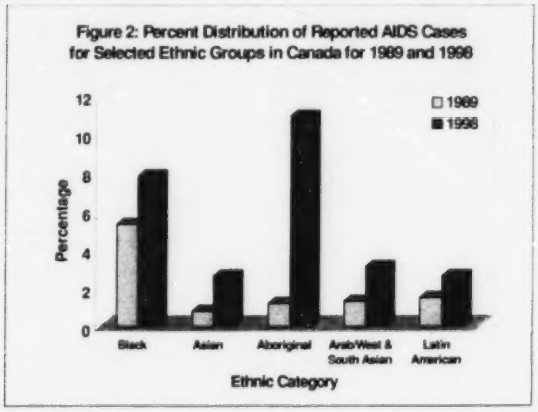
Proportion of Reported AIDS Cases Increasing Among Black and Aboriginal Communities

By 1998, 72.9% of AIDS cases were reported among Whites, marking a distinct decline in the proportion of AIDS cases among this ethnic group since 1989 (Figure 1). All other ethnic groups

witnessed an increase in their proportion of reported AIDS cases between 1989 and 1998 (Figure 2). Aboriginals experienced the greatest increase in the proportion of reported AIDS cases over this time period. In 1989 only 1.2% of the reported AIDS cases were among Aboriginals, and by 1998, 10.9% of AIDS cases were reported among this ethnic group. Other noteworthy changes occurred among Blacks, where between 1989 and 1998 the percentage of reported AIDS cases increased from 5.3% to 7.8%.



Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.



Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

Limitations of Ethnicity Data from Reported AIDS Cases

There are several significant limitations regarding the accuracy of ethnicity data obtained from AIDS surveillance information.

- Misclassifications in ethnic status may result at the time of AIDS diagnosis.
- Patients in certain communities may not wish to identify their ethnicity, resulting in under-representation of certain ethnic groups among AIDS cases.
- Patients and physicians are constrained by the list of ethnic categories available on the AIDS Case Report Form. Choosing from a pre-defined and limited list may compromise the accurate reporting of ethnicity.
- Not all provinces and territories put the same priority on routinely collecting and/or reporting ethnicity status.
- Wide variations in the completeness of ethnicity reporting between provinces, as well as, regions of provinces may result in a systematic under-representation of specific communities.
- Reporting delay may vary by ethnicity, and therefore, will affect the ethnicity data for reported AIDS cases.

Given these limitations, caution should be exercised in interpreting the ethnicity data presented. The paucity of reported AIDS cases with ethnicity data particularly in recent years, and the possibilities of bias and under-reporting of specific ethnic groups may alter the current trends in reported AIDS cases observed in Canada. For a more complete understanding of how the AIDS epidemic in Canada is affecting different ethnic populations, the completeness and accuracy of reporting ethnicity needs to be improved.

Table 1: Annual Number of AIDS Cases and Percentage Distribution by Ethnicity in Canada for Cases Diagnosed up to December 31, 1998; Last Data Reported to LCDC to February 26, 1999.

Year of Diagnosis	White	Black[1]	Asian[2]	Aborig.[3]	Arab/West & South Asian[4]	Latin American[5]	Total[*]	Ethnicity Not Reported[*]	Grand Total
< 1989	2233 (86.2%)	240 (9.3%)	22 (0.8%)	33 (1.3%)	36 (1.4%)	25 (1.0%)	**2589 (76.2%)**	808 (23.8%)	**3397**
1989	1105 (89.9%)	65 (5.3%)	10 (0.8%)	15 (1.2%)	16 (1.3%)	18 (1.5%)	**1229 (88.7%)**	157 (11.3%)	**1386**
1990	1042 (88.8%)	68 (5.8%)	17 (1.4%)	14 (1.2%)	17 (1.4%)	15 (1.3%)	**1173 (82.4%)**	250 (17.6%)	**1423**
1991	1132 (88.8%)	77 (6.0%)	16 (1.3%)	30 (2.4%)	11 (0.9%)	9 (0.7%)	**1275 (82.6%)**	269 (17.4%)	**1544**
1992	1253 (87.6%)	87 (6.1%)	19 (1.3%)	27 (1.9%)	23 (1.6%)	21 (1.5%)	**1430 (83.7%)**	279 (16.3%)	**1709**
1993	1265 (86.2%)	101 (6.9%)	19 (1.3%)	33 (2.2%)	23 (1.6%)	27 (1.8%)	**1468 (83.8%)**	283 (16.2%)	**1751**
1994	1200 (86.8%)	81 (5.9%)	23 (1.7%)	36 (2.6%)	23 (1.7%)	19 (1.4%)	**1382 (81.4%)**	316 (18.6%)	**1698**
1995	971 (83.9%)	72 (6.2%)	29 (2.5%)	48 (4.2%)	25 (2.2%)	12 (1.0%)	**1157 (74.6%)**	394 (25.4%)	**1551**
1996	485 (81.2%)	42 (7.0%)	16 (2.7%)	39 (6.5%)	6 (1.0%)	9 (1.5%)	**597 (59.7%)**	403 (40.3%)	**1000**
1997	207 (74.7%)	26 (9.4%)	9 (3.2%)	25 (9.0%)	1 (0.4%)	9 (3.2%)	**277 (55.6%)**	221 (44.4%)	**498**
1998	140 (72.9%)	15 (7.8%)	5 (2.6%)	21 (10.9%)	6 (3.1%)	5 (2.6%)	**192 (68.8%)**	87 (31.2%)	**279**
Total	**11033 (86.4%)**	**874 (6.8%)**	**185 (1.5%)**	**321 (2.5%)**	**187 (1.5%)**	**169 (1.3%)**	**12769 (78.6%)**	**3467 (21.4%)**	**16236 (100%)**

Note: Percentages for each ethnic group within each year were based on the total number of cases for the respective year where ethnicity was known (i.e. the Grand Total minus those reports for which ethnicity was not reported). Some years may not add up exactly to 100% due to rounding.

[*] Percentages based on the Grand Total for the respective year.

1. African, Haitian, Jamaican, Somali, etc.
2. Chinese, Japanese, Vietnamese, Cambodian, Indonesian, Laotian, Korean, Filipino, etc.
3. Native Indian, Inuit, Métis and Aboriginal unspecified
4. East Indian, Pakistani, Sri Lankan, Punjabi, Bangladeshi, Armenian, Egyptian, Iranian, Lebanese, Moroccan, etc.
5. Mexican, Central/South American, etc.

Comments

Issues related to ethnicity are not simple to address, especially when dealing with AIDS diagnosis or HIV infection. Demographic information on ethnicity, however, may be invaluable to community health groups and public health officials for planning outreach and public health campaigns whose goals are to reduce the spread of HIV and to treat afflicted members of their respective communities. As with other descriptors of the HIV/AIDS epidemic, such as gender, age group, and exposure category, ethnicity information on reported AIDS cases may assist community health care providers to focus preventive health care more effectively.

The Bureau of HIV/AIDS, STD and TB is now reviewing the criteria for reporting of ethnicity data. Your comments and suggestions regarding this issue are welcome.

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May 1999

HIV and AIDS Among Aboriginal People in Canada

Introduction

In recent years, the HIV/AIDS epidemic among Aboriginal people in Canada has been better described, particularly for populations in inner-cities. However, the lack of solid information from smaller urban centres and rural areas limits our further understanding of HIV among Aboriginal people. Despite this, it is clear that some Aboriginal communities are at increased risk for HIV infection because of their low socioeconomic status and high rates of sexually transmitted diseases. This report updates current information on the status of the HIV/AIDS epidemic among Canada's Aboriginal people.

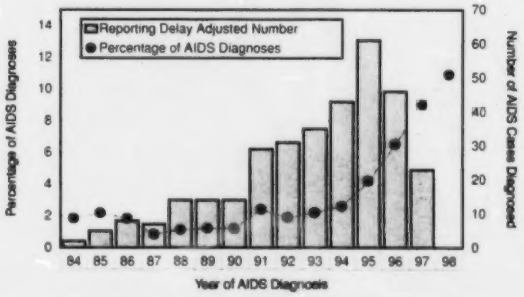
Pattern of AIDS is Different among Aboriginal People

Increasing trend over time:

- As of December 31, 1998, a cumulative total of 16,236 AIDS cases were reported to the Bureau of HIV/AIDS, STD and TB, and of these, 321 were indicated as Aboriginal[1].

- Figure 1 shows that the annual number of Aboriginal AIDS cases steadily increased until 1995 and then decreased slightly in 1996/97, likely due to the availability of new, more effective treatments, and perhaps also due to decreased reporting completeness (also see *Epi Update* entitled "AIDS and HIV in Canada") (delay adjusted data not yet available for 1998). The graph also shows an increase over time in the proportion of cases attributed to Aboriginal persons non-adjusted for reporting delay, from 2% before 1989 to more than 10% in 1998.

Figure 1: Annual Aboriginal AIDS reports



Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

- Note that Aboriginal AIDS cases are under-reported because of delays in reporting and variation in the completeness of reporting ethnic status between provinces.

Injection drug use (IDU), a major risk factor:

- Among the 263 male Aboriginal AIDS cases, exposure categories were as follows: men who have sex with men (MSM) 57.4%, IDU 19.4%, MSM/IDU 12.9%, heterosexual

contact 4.9%, receiving blood/clotting factors 0.8%, perinatal transmission 1.5%, and non-identified risk factor (NIR) 3% [1].

- Among the 58 female Aboriginal AIDS cases, exposure categories were as follows: IDU 53.4%, heterosexual contact 29.3%, receiving blood/clotting factors 6.9%, perinatal transmission 5.2%, and NIR 5.2% [1].

- The proportion of adult Aboriginal AIDS cases attributed to any IDU category (IDU, IDU/MSM) has dramatically increased over time, from 6.3% before 1989 to 25.4% during 1989-93 and 51.2% during 1994-98 [1].

- Adult Aboriginal AIDS cases are more likely than adult non-Aboriginal AIDS cases to have their exposure category attributed to any IDU category (32.8% vs 7.8% for men, 56.4% vs 17.7% for women) [1].

Aboriginal AIDS cases are younger and more likely to be women compared with non-Aboriginal AIDS cases:

- Aboriginal AIDS cases are younger than non-Aboriginal AIDS cases (29.3% vs 17.6% were diagnosed at less than 30 years of age) [1].

- The proportion of women among adult Aboriginal AIDS cases is higher than among adult non-Aboriginal AIDS cases (17.5% vs 6.4%) [1].

HIV Data Needed to Assess More Recent Trends in Epidemic

- AIDS data reflect patterns of HIV infection approximately 7-10 years in the past, so data on more recent HIV infections are needed to better reflect the current epidemic.

- Of the few studies done among Aboriginal people or in sub-populations with Aboriginal identifiers, prevalence rates in a variety of settings were 0.4%-29.7% in Vancouver (Native alcohol and drug treatment centres, inmates, and needle exchange centres) [2-5], 2.1% in Alberta STD clinics [6], 13.4% in Winnipeg injection drug users [7], 7.7%-7.9% in Ontario (province-wide needle exchange centres, self-report by on-reserve people who had been tested for HIV) [8-9], and 1.4% in Montreal street youth [10] Overall, these prevalence rates are similar to those of corresponding non-Aboriginal groups, but the relatively small amount of data cannot rule out the possibility that rates are in fact higher among Aboriginal people.

- Recent data (1993-98) from BC, Alberta, and Saskatchewan show that Aboriginal people account for 15%, 26%, and 30% of newly diagnosed HIV-positive cases respectively, and that IDU and heterosexual behaviours were the most significant risk factors. For example, the proportion of new HIV-positive tests among Aboriginal persons attributed to any IDU and heterosexual exposure categories was 73% and 13% in BC, 60% and 13% in Alberta, and 83% and 8% in Saskatchewan (1998 data only) respectively [11-13]. It also appears that Aboriginal people are accessing HIV testing, for example, it has been observed that in 1996, 28% (481/1,742) of persons in Saskatchewan and 57% (345/599) of persons in Prince Albert who tested at anonymous HIV testing programs were Aboriginal [14].

- A recent study (1997) among 151 HIV-infected Aboriginal persons in Vancouver found that 58% participants reported IDU and 14% reported MSM as their main exposure category [15].

Aboriginal People Are Over-represented in Groups at High Risk for HIV Infection

- A study in all HIV pediatric centres in Canada found that 19% (50/259) of women known to be HIV-positive at the time of the birth of a child during 1995-97 were Aboriginal. Of these HIV-positive women, Aboriginal women (62%) were as likely to be on

antiretroviral therapy as Caucasian women (66%) and Black women (63%)[16].

- At a BC clinic which cares for the majority of HIV-infected pregnant women in the province, between 1989-97, 36% (45/126) of the children born to mothers under care were Aboriginal[17].

- An ongoing cohort study (1996-98) among IDUs in Vancouver found that at baseline, there were more Aboriginal people in the HIV-positive group than in HIV-negative group (30% vs 21%). In addition, ever borrowing needles and current methadone treatment were associated with HIV infection among Aboriginal participants[5].

- In some cities, 11-75% of clientele using inner-city services such as needle exchange and counseling/referral sites are Aboriginal[7-8, 18-22].

- Recent studies among MSM found 8% of the studied population in Vancouver and 17% in Winnipeg were Aboriginal[23,24].

- Around 14% of federal inmates in Canada are Aboriginal, with rates up to 40% in provincial or federal jails in some provinces[3,25-27].

- The rates of Gonorrhea and Chlamydia in some regions predominantly populated by Aboriginal people (Yukon and North West Territories) are 2-11 times the national average[28].

Comments

Interpretation of AIDS data among Aboriginal people is difficult because ethnic information is lacking for many reported AIDS cases (21% of total AIDS cases). This may lead to bias if the proportion of Aboriginal people in the unrecorded group is different to that in the recorded group.

With respect to HIV data, few studies have been done specifically in Aboriginal populations or in mixed populations where Aboriginal status is identified. Therefore, generalizability of these results to the general Aboriginal population is limited. In addition, HIV testing and clinical data are available only for those who came forward for testing and/or treatment; thus they do not represent the total number of Aboriginal people infected with HIV. Furthermore, for testing done at anonymous test sites, the relatively small amount of information collected makes it difficult to rule out duplicates and to further interpret the characteristics of Aboriginal HIV-positive tests reports.

Despite these limitations, available evidence suggests that Aboriginal people are infected at a younger age than non-Aboriginal people, that injection drug use is an important mode of transmission, and that the HIV epidemic among Aboriginal people shows no sign of abating. Furthermore, the high degree of movement of Aboriginal people between inner cities and rural areas may bring the risk of HIV to even the most remote Aboriginal community.

Better data on HIV/AIDS epidemiology and HIV testing among Aboriginal people in Canada are needed to guide prevention and control strategies.

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HIV/AIDS Among Men Who Have Sex With Men

Introduction

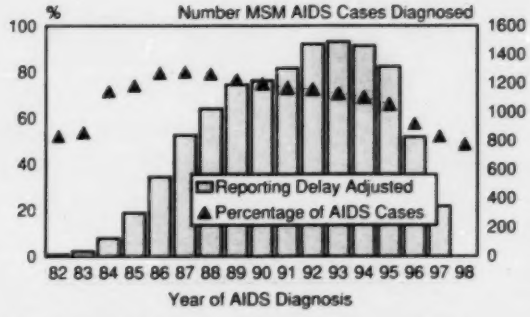
The HIV/AIDS epidemic in Canada no longer continues to affect men who have sex with men (MSM) to the same extent that it did in the early-to-mid 1980s. However, this group is still a significant part of the epidemic. This report updates the current information on the status of HIV and AIDS among MSM in Canada.

AIDS Data

- As of December 31, 1998, a cumulative total of 16,236 AIDS cases had been reported to the Bureau of HIV/AIDS, STD and TB. Of 14,917 male AIDS cases, 11,532 (77%) were attributed to MSM and an additional 713 (4.8%) were attributed to the combined category of MSM and injection drug use (IDU)[1].

- Figure 1 shows that the annual number of AIDS cases attributed to MSM, adjusted for reporting delay, leveled off from 1992 to 1994 and has decreased since then, likely due to availability of new, more effective treatments and perhaps also due to decreased reporting completeness (see *Epi Update* entitled "AIDS and HIV in Canada") (delay adjusted data not yet available for 1998). The graph also shows a decrease over time in the proportion of MSM-AIDS cases non-adjusted for reporting delay since 1987-88. However, the proportion of cases attributed to the category MSM/IDU has steadily increased from 2.7% of cases in 1985 to 4.3-6.6% during 1994-98[1].

Figure 1: Annual MSM-AIDS reports



Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

HIV Testing Data

- While AIDS data provide information on HIV infection approximately 10 years in the past, HIV testing data can help provide a picture of more recent infection.

- Data from provincial testing programs indicate that MSM is a decreasing factor among new HIV-positive test reports. For example, at the national level, 36% of new positive HIV test reports in 1997/98 indicated MSM as a risk factor compared with 40% in

1996, 44% in 1995 and 75% prior to 1995[1].

- Data from Ontario indicate that new HIV infections among MSM who are repeatedly tested for HIV have decreased from 1.9 per 100 person-years in 1992, stabilized at the level of 1.1-1.3 per 100 person-years between 1994-96, and slightly increased to 1.4 per 100 person-years in 1997[2].

HIV Prevalence and Incidence Data

- In the beginning of the HIV epidemic in early 1982-84, HIV prevalence among MSM was estimated at 36% in Vancouver[3] and 25% in Montreal[4] and HIV incidence was estimated at 11.3% in Vancouver[3].

- In the early 1990s, a national study among MSM reported that 65% had been tested for HIV antibody and self-report prevalence rates were 18.2% nationally, 23.0% in Vancouver, 27.2% in Toronto, 20.1% in Montreal, and between 10.2% and 20.5% in other regions of Canada[5].

- Of studies done more recently (1994-98), prevalence rates among MSM in a variety of settings were 11% in Alberta STD patients[6], 7% in a Winnipeg survey[7], 5.2% in Ontario MSM who underwent voluntary HIV testing[8], 1% in Ontario bisexual men (self-reported data)[9], and 4-10% in Montreal (street youth and inmates)[10,11]. Prevalence rates are higher for MSM who are also injection drug users; for example, 14-19% among MSM/IDU attending needle exchange programs in Quebec[12,13].

- Cohort studies during the period 1995-98 suggest the incidence continues to be of 1 per 100 person-years among MSM of all ages in Montreal[14] and 2 per 100 person-years among MSM less than 30 years old in Vancouver[15].

Risk Behaviour Data

- In a 1996-98 Montreal cohort study of MSM aged 16 years and older (median age of 31 years), 13% of participants reported engaging in unprotected anal intercourse with a casual partner in the 6 months prior to being interviewed[14]. Unprotected anal sex in the last six months and unprotected receptive oral sex with a known casual HIV-positive partner were associated with HIV infection.

- In a recent Vancouver cohort study (1995-98) of MSM aged 18-30 years, 26% reported having unprotected anal intercourse with a casual partner in the year prior to baseline[16].

- Further comparison between MSM aged 18-30 years in the recent Vancouver cohort and the Montreal cohort found that MSM in Montreal were less likely to report currently having sex with both men and women (5% vs 12%), or unprotected anal sex with sex trade clients (4% vs 9%) or male sex workers (<1% vs 5%). However, MSM in Montreal were more likely to have more than 20 sexual partners during the previous six months (11% vs 8%)[17].

- In a comparison with a 1982-84 Vancouver cohort of MSM (unadjusted for age), the recent Vancouver cohort reported a higher number of sexual partners during the past year (15 vs 12), a higher proportion of receptive anal intercourse with casual partners (62% vs 38%), but a much lower proportion of unprotected anal sex (6% vs 59% for insertive anal sex). With regular partners, the proportion of reporting receptive anal intercourse were 92% vs 65%. When comparing only MSM aged 18 to 30 in both cohorts, similar patterns were observed for the number of sexual partners (15 vs 12), the proportion reporting receptive anal intercourse with casual partners (62% vs 49%), and the proportion reporting unprotected receptive anal sex with casual partners (6% vs 63%)[18].

Comment

The incidence of HIV among MSM has been decreasing since the mid-1980s, although transmission continues to occur. In 1996, the MSM exposure category comprised about 30% (1,240) of the estimated 4,200 new HIV infections that occurred during the year[19] (see also *Epi Update* entitled "HIV Prevalence and Incidence in Canada"). Given that a significant proportion of MSM continue to have anal sex with both regular and casual partners, including some unprotected sex, better data are needed to continue monitoring the epidemic in this important group and to target prevention and care programs.

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HIV/AIDS Among Injection Drug Users in Canada

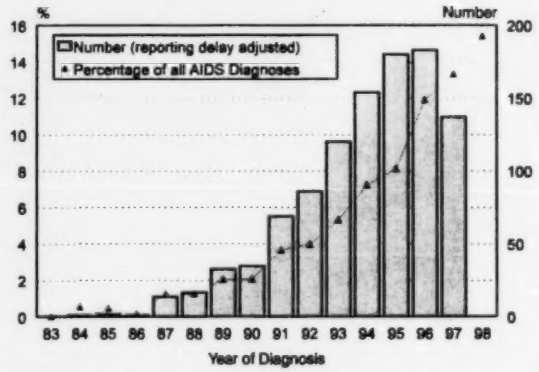
Introduction

The Canadian HIV epidemic has changed significantly since the early 1980s when it was concentrated in men who have sex with men (MSM). In 1996, approximately half of the estimated 4,200 new HIV infections[1] which occurred in Canada were among injection drug users (IDUs), illustrating the significance of this group in the current Canadian epidemic. This report updates current information on the status of the HIV/AIDS epidemic among IDUs in Canada.

Injection drug use: an increasing risk factor among AIDS cases[2]

- As of December 31, 1998, 16,236 AIDS cases had been reported to the Bureau of HIV/AIDS, STD and TB. Of these, 819 (5%) were attributed to injection drug use and an additional 713 (4.4%) were attributed to the combined category of injection drug use and MSM.
- Injection drug use is a more common risk factor for women, with 18.2% of female AIDS cases attributed to injection drug use versus 4.0% for male cases. However, when the analysis is restricted to non-MSM cases, the percentage of male cases attributed to IDU is 21.5%.
- Figure 1 shows that the number of AIDS cases attributed to IDU steadily increased until 1996 and then decreased slightly in 1997, likely due to the availability of new, more effective treatments and perhaps also due to decreased reporting completeness (see *Epi Update* entitled "AIDS and HIV in Canada") (delay adjusted data not yet available for 1998).

Figure 1: Annual IDU-AIDS reports[3]



Source: Bureau of HIV/AIDS, STD & TB, LCDC, Health Canada, May 1999.

- The proportion of AIDS cases attributed to injection drug use has also increased over time (Fig. 1). For male cases, this proportion has increased from 0.8% during the period before 1989, to 3.1% during 1989-1993, and

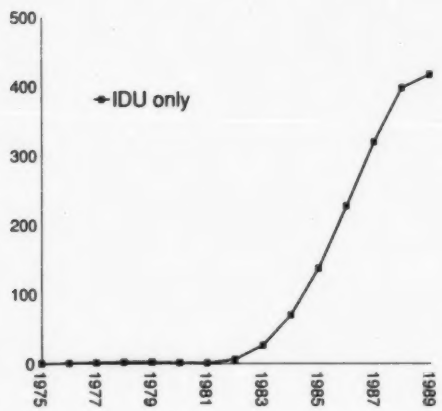
to 7.6% during 1994-1998. For women, the increase has been even more dramatic: from 0.5% to 16.1% and finally to 25.8% for the respective time periods.

Injection Drug Use is also an Increasing Risk Factor in HIV-Positive Test Reports

- Data from provincial HIV testing programs in Ontario and B.C. indicate that injection drug use is an increasing risk factor among new HIV-positive test reports. For example, in Ontario, 5.7% of new positive test reports in 1996-97 were among IDUs compared with 5.4% in 1995 and 2.8% prior to 1995. The situation is even more marked in B.C., where injection drug use accounted for 43% of new positive tests in 1996-97 compared with 38% in 1995 and 8.2% prior to 1995[4].

- Although such HIV testing data only partly reflect trends in new infections, they nonetheless suggest increasing infections among IDUs. This is supported by the reconstruction of historical HIV infections among IDUs in Canada up to 1989 (see Fig 2. below)[3].

Figure 2 Estimated Annual HIV Infections



Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

HIV Prevalence and Incidence Data Suggest Urgent Problem among Injection Drug Users

- HIV prevalence among injection drug users in Montreal has increased from about 5% prior to 1988 to 19.5% in 1997[5].

- Prevalence among IDUs in Vancouver has increased from about 4% in 1992/93[6] to 23% in 1996/97[7] and prevalence among Toronto IDUs has increased from 4.8% in 1992/93 to 8.6% in 1997/98[8].

- A 1992/93 study of IDUs in Ottawa found a prevalence among needle exchange program (NEP) attenders of 10.3%[9]; a 1996/97 study of NEP attenders found prevalence had increased to 20%[10].

- Recent data from NEP attenders in smaller cities in Quebec show that HIV prevalence among IDUs has reached worrisome levels even outside major urban areas (Quebec City 9.0% and semi-urban areas of Quebec ranging from 1.0-9.6%[10]).

- Estimates of HIV incidence among Montreal IDUs range from 5.1 new infections per 100 users per year during the period 1988-95[11] to 8.1 during the period 1990-97[12]. A small study in Vancouver in 1992/93 estimated incidence at about 5 per 100 person-years[6], and data from a cohort study in 1996-98 found a rate of 8.3[13]. Data from repeat NEP attenders in the province of Quebec and Ottawa found an incidence of 5.5 per 100 person-years[10].

Sub-populations Within IDU Require Special Attention

- Injection drug users are over-represented in prisons. Estimates of HIV prevalence among prisoners vary from 1-4% in men and from 1-10% in women, and in both groups infection is strongly associated with a history of

injection drug use[14-18].

- Aboriginal peoples are over-represented in inner city injection drug use communities and among clientele using inner-city services such as needle exchange programs and counselling/referral sites.

Comment

The HIV epidemic among injection drug users in Canada continues to be a very serious problem. This problem is best documented in larger cities, but it is now being seen outside major urban areas as well. Additional epidemiologic data are needed to better define the extent of the problem and to guide the development and refinement of effective prevention policies and programs. These data are especially needed for areas outside major urban areas and for Aboriginal populations. Given the geographic mobility of injection drug users and their social and sexual interaction with non-users, the dual problem of injection drug use and HIV infection is one that ultimately affects all of Canadian society.

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Risk Behaviours Among Injection Drug Users in Canada

Introduction

The proportion and number of AIDS cases and estimated HIV infections attributable to injection drug use in Canada have been increasing steadily since the beginning of the HIV epidemic in the early 1980s (see *Epi Update* entitled "HIV/AIDS Among Injection Drug Users in Canada," May 1999). In 1996, approximately half of the estimated 4,200 HIV infections that occurred in Canada were among injection drug users (IDUs),[1] illustrating the significance of this group in the Canadian epidemic. This report briefly describes the drug injection and sexual risk behaviours seen among IDUs in this country. Needle exchange programs, an important part of the strategy to reduce HIV transmission among drug injectors in Canada, are also discussed.

Neither a Borrower Nor a Lender Be: Sharing of Needles and Other Injection Equipment

The sharing (borrowing and lending) of needles and syringes is well-established as a means of HIV infection and is relatively common among IDUs:

- A recent study in Vancouver indicated that 40.0% of IDUs had borrowed used needles within the last six months and that 38% had lent their needles to others within this time period.[2]
- Among IDUs recruited from needle exchange programs (NEPs) in Ottawa and the province of Quebec, 44% reported needle borrowing and 38% reported needle lending in the six months prior to the study.[3]
- In a study of Montreal NEP attendees in 1996/7, 43.9% had borrowed needles in the six months before their interview, and 40.3% had lent their needles to others in this time frame.[4]

The sharing of other injection equipment (e.g., spoons/cookers, filters, and water), often referred to as "indirect sharing," may also be associated with HIV seroconversion. Research suggests that indirect sharing occurs more frequently among IDUs than does multi-person use of needle/syringes:

- A 1996/1997 study of Ottawa NEP attendees reported that 52% of men and 33% of women shared injection equipment other than needles.[5] A high proportion (42%) of street-recruited IDUs in a recent survey in Vancouver also admitted to sharing spoons, cottons, and water with their injecting peers.[2]
- In a 1995 case-control study of NEP attendees in British Columbia, 69% of participants

reported indirect sharing. This behaviour was higher among those who borrowed needles (83%) compared to those who did not admit to needle borrowing (53%).[6]

- International studies[7,8,9] of IDUs have identified other aspects of drug injection, such as "booting," "backloading," and "flagging," that may also increase the risk of HIV transmission. However, the full extent of such risk behaviours among Canadian IDUs is still under investigation.

Needle Exchange Programs (NEPs): Good but Not a Panacea

- NEPs have been aptly described as a focal point for intervention. In addition to distributing sterile injection equipment, NEPs are a useful way of getting in touch with IDUs in order to educate and counsel them, and to connect this hard-to-reach population to health care services and drug treatment programs.

- Contrary to the arguments raised by some opponents of needle exchange, there is evidence that NEPs do not increase the number of IDUs or lower the age of first injection [10,11] Recent research also shows that needle exchanges do not increase the number of needles discarded in a community, or change the locations where needles are disposed.[12]

- Research suggests that NEPs attract IDUs at relatively high risk for HIV infection. In Vancouver, IDUs who were frequent NEP attendees were more likely to report unstable housing and hotel living, frequent cocaine injection, sex trade involvement, injecting in "shooting galleries," and incarceration in the last six months than were non-frequent attendees.[13,14]

- A recent Montreal study estimated the number of syringes that would have had to have been available if all of that city's IDUs were to have used a sterile needle for each injection throughout 1994, and compared this figure with the number of syringes distributed by NEPs or sold by pharmacies during that year. The results showed that less than 5% of the need for sterile needles among IDUs in that city was actually met.[15]

- Most international studies report substantial declines in needle sharing among IDUs who use NEPs. [16] However, some researchers have found no difference in sharing behaviours between attendees and non-attendees or have found greater declines in injection risk behaviours among IDUs who do not use such programs.[17,18]

- Despite concerns by some that NEPs may exacerbate the spread of HIV among IDUs, a growing body of research indicates that this is not, in fact, the case.[13,19] Although some studies have indeed reported an increased HIV prevalence and incidence among NEP attendees[20], this is likely due to the fact that NEP attendees are higher risk IDUs than non-attendees.[13,19,21]

Risky Business: Trading Unprotected Sex for Money and Drugs

Many IDUs in Canada are involved in unprotected commercial sex:

- Among NEP attendees in Ottawa and the province of Quebec, 9.4% of men and 47.3% of women reported having sex-trade clients. Of these, 63% of men and 35% of women never or only sometimes used condoms with clients.[3]

- In a Vancouver study, 23% of IDUs had been paid for sex in the six months prior to being interviewed.[2]

Not Safe Enough: Sex with Regular and Casual Partners

Among IDUs with regular and casual opposite-sex partners, condom use is also low:

- Among NEP attendees in Ottawa and the province of Quebec, 79.9% of women and 77.7% of men with regular partners never or only sometimes used condoms. Of those with casual partners, 65.5% of both men and women never or only sometimes used condoms.[3]

- According to a study conducted in Vancouver in 1995, only 60% of women and 51% of men who had casual sexual partners used condoms more than 75% of the time.[13]

Same Sex Partners and Male IDUs

A substantial minority of male IDUs report unprotected intercourse with same sex partners:

- Among IDUs recruited from NEPs in Quebec and Ottawa, 4.4% of males had a regular male partner and of these, 72.5% never or only sometimes used condoms. A further 6.8% had casual male partners and of these, 75% never or only sometimes used condoms.[3]

- Of men who took part in a Vancouver IDU study, 22.2% reported having same sex partners within the last six months.[2]

Injection Drug Use Is a Problem among Street Youth and Prisoners

Appropriate and accessible HIV prevention programs for drug injecting street youth and inmates are clearly needed:

- One-third of a sample of Montreal street youth had injected drugs in the previous six months. Among those who were regular injectors, 47% had shared needles in this time frame.[22]

- Among female prisoners in a Quebec prison, 38% reported injecting drugs before they were incarcerated, and about half of these women had shared needles. Of those who reported drug injection before going to prison, 11% admitted to injecting drugs during their incarceration, and most (80%) shared needles.[23]

- Among male prisoners in this same study, 26% reported that they had injected drugs before being incarcerated, and about half of these had shared needles. Of those who admitted to injecting drugs outside prison, 2% reported injection drug use during their incarceration, and most (92%) shared needles.[23]

Comment

High-risk needle sharing and sexual behaviours continue to fuel the HIV epidemic among IDUs in Canada, and this group now accounts for about half of new infections in this country. Continued monitoring of risk behaviours among IDUs and of factors associated with these behaviours is critical, especially with respect to trends over time. This information is needed to help guide and evaluate prevention programs that target drug injectors. At present, there is a huge gap between IDU need and the number of sterile syringes that are currently being distributed by NEPs. This issue must be addressed to help make a "one hit one fit" policy more realistic.[24] Although NEPs are an integral part of Canada's HIV prevention strategy for IDUs, exchange programs alone are likely not sufficient to reduce or prevent HIV transmission in this subgroup of the population.[13,22] NEPs must be complemented by appropriate and accessible health and social services, detoxification, and drug treatment programs.

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Sexual Risk Behaviours of Canadians

Introduction

Unprotected sexual intercourse is one of the main modes of HIV transmission in Canada. Therefore, it is important to understand sexual behaviour at the population level to assess the potential for the spread of HIV and to help target and evaluate prevention programs. This report updates information on the sexual behaviour of the general Canadian population. More detailed behavioural information is available in the document entitled "HIV Risk Behaviours Among Canadians: An Inventory and Synthesis."[1]

Multiple Partners and Condom Use in the General Population: Room for Improvement

Although most Canadians report having had only one sexual partner in the last 12 months,[2,3] a substantial minority report having had multiple partners in this time frame:

- A recent Canadian survey[2] (1997) indicated that among adults aged 20 to 45 years, 8.4% of men and 6% of women reported having two or more sexual partners within the previous year.
- A 1994/1995 survey of adults found that 12% to 19% of men and 6% to 7% of women had had two or more sexual partners in the previous 12 months.[3,4]

Data indicate that a significant proportion of acts of sexual intercourse in the general population are unprotected :

- In a 1994/1995 survey,[4] of those who reported sexual intercourse with a non-regular partner in the year prior to being interviewed, only 26% of men and 19% of women indicated that they always used condoms with non-regular partners. The remainder either never used condoms or used them inconsistently.
- In a 1997 survey, among those who reported having one or more non-regular partners in the last year, 27.7% of men and 28.1% of women did not use a condom the last time they had sexual intercourse with a non-regular partner.[2]

Adolescent Sexual Behaviour: An Area of Concern

Studies show that many youth are having unprotected sexual intercourse with multiple partners:

- In a school-based survey conducted in Nova Scotia, approximately 61% of grade 12 students (ages 17 to 18 years) reported having sexual intercourse in the year prior to the survey. Of those grade 12 students who were sexually active, only 32% always used condoms, and 40% indicated that they had had two or more partners in the past year.[5] A

Canada wide survey conducted in 1988 suggested that about 50% of 17-year-olds had had sexual intercourse in the year prior to being interviewed.[6]

- A 1992 survey in western Canada found that 55% of 17 year-old boys and 52% of 17 year-old girls had had sexual intercourse. Of these, 33% of boys and 30% of girls had had four or more partners. Of those who were sexually active, only 57% of boys and 45% of girls in this age group used a condom the last time they had sexual intercourse (for more information, see *Epi Update* entitled "HIV and AIDS Among Adolescents in Canada," May 1999).[8]

- Surveillance data on the incidence of other sexually transmitted diseases (STDs) can also provide a measure of the extent of unprotected sexual intercourse in a population. In 1996, girls aged 15 to 19 years had the highest rate of reported chlamydia and gonorrhea infections in Canada.[9]

Groups with Higher-risk Sexual Behaviour

Men who have sex with men (MSM), bisexual males, injection drug users (IDUs), and street youth are among the groups that are known to engage in higher-risk sexual behaviour:

- Among MSM, a national survey in 1991/1992 showed that 15% of respondents had engaged in unprotected receptive anal intercourse in the past year.[10]

- In a more recent Vancouver study of MSM (age range 18 to 30 years), 11% reported unprotected receptive anal intercourse with a non-regular partner, and 19% reported unprotected insertive anal intercourse with a non-regular partner in the year prior to being interviewed[11] (for more information, see *Epi Update* entitled "HIV and AIDS Among Men Who Have Sex With Men," May 1999).

- In a 1997 study of bisexual males in Ontario, 50.9% of all respondents reported at least one episode of unprotected sex with a regular female partner, and 9.9% reported at least one episode with a casual female partner in the year prior to the study. Further, 12.7% of respondents reported having unprotected sex with a regular male partner on at least one occasion, and 7.6% admitted to at least one episode of unprotected sex with a casual male partner in the 12 months before being interviewed.[12]

- In a Vancouver study of IDUs, 60% to 80% of respondents did not always use a condom in the past six months when having sexual intercourse with opposite-sex regular partners.[13]

- In a study of injection drug users who attended needle exchange programs in Ottawa and the province of Quebec, 63% of men having male sex-trade partners reported inconsistent condom use with these clients. Among women, 34.6% of those with sex trade clients did not consistently use condoms with these partners[14] (for more information, see *Epi Update* entitled "Risk Behaviours Among Injection Drug Users in Canada," May 1999).

- Recent studies of street youth indicate that 85% to 98%[15,16] have had sexual intercourse, with over 60%[16] having had their first sexual intercourse before the age of 13. In addition, 52% to 78%[15,16] of street youth have had six or more lifetime sexual partners, and many report inconsistent condom use.

Comment

Although most Canadians report having had only one sex partner in the past year, there are many individuals who report having multiple (two or more) partners. In addition, there is still a significant amount of unprotected sex, especially among adolescents, and this is of particular concern with respect to sex with non-regular partners. Such behaviour places individuals at

potential risk for HIV and other sexually transmitted diseases.

Although a fair amount of information is available on sexual behaviour in Canada, there is limited information on trends in specific behaviours over time. Such trend data are urgently needed to help guide prevention programs and to evaluate their effectiveness in reducing sexual HIV transmission in Canada.

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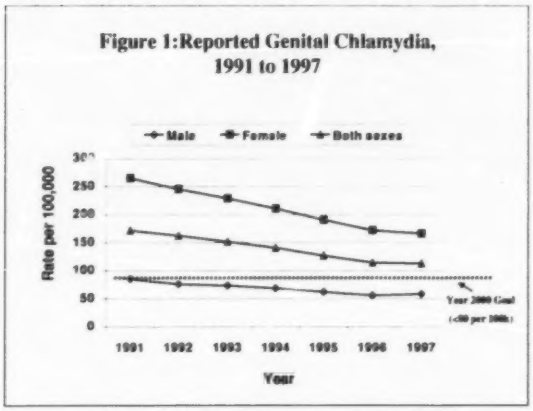
Genital Chlamydia in Canada

Genital chlamydia (*chlamydia trachomatis*) first became nationally reportable in 1990 and emerged as the most prevalent bacterial sexually transmitted disease (STD) in Canada. Preventable and treatable, genital chlamydia remains high in Canada - in 1997 the chlamydia rate (112.7/100,000) was over 7 times the national rate for gonorrhea[1] (14.9/100,000) - although the number of reported cases of chlamydia has been decreasing since 1991 for both sexes[2].

- Figure 1 shows the trends in reported genital chlamydia rate from 1991 to 1997. A national goal was set to reduce new chlamydial infections to 80 per 100,000 by the year 2000[3] (1997 rate was 112.7/100,000[1]).

Figure 1:Reported Genital Chlamydia, 1991 to 1997

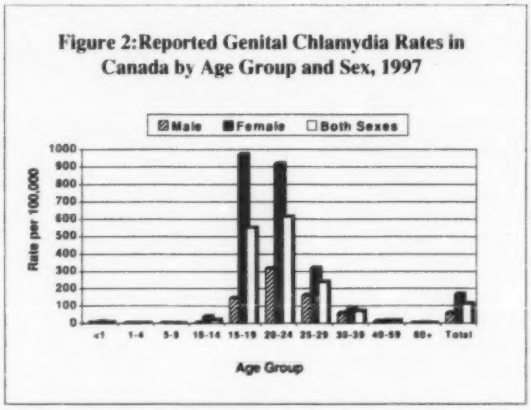


Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

- Reported genital chlamydia cases decreased an average of 7.7% per annum from 1991 to 1996[2]. However, the decrease from 1996 to 1997 has tapered to 1.8%[1]. This may be a result of more screening being done with newer, non-invasive technology.

Demographic Distribution of Reported Genital Chlamydia in Canada (Figure 2).

Figure 2:Reported Genital Chlamydia Rates in Canada by Age Group and Sex, 1997



Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

- Genital chlamydia is predominantly a disease of the young; in 1997 youth and young adults between the ages of 15 and 24 accounted for 69% of infections[1].

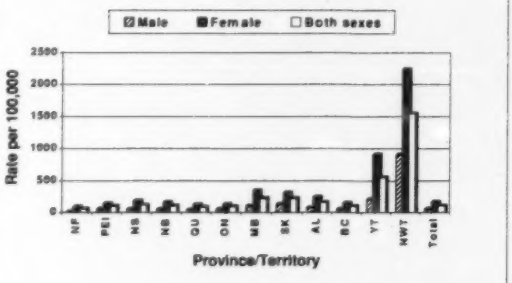
- The overall rate for 1997 for males was 58.1 per 100,000 and 166.2 per 100,000 for females. Rates of infections in females exceeded those of males in all age groups with the greatest difference in the 10-14 age group (1:22, male:female ratio) and the 15-19

age group (1:6, male:female ratio)[1]. This pattern was the same as that found in 1989/90[4], suggesting that perhaps older males were still infecting younger females, as well as males still getting tested less than females.

- Chlamydia rates were highest in young females, 15-24 years (943.0/100,000), representing 5.7 times the national rate for all females. The highest rate occurred among those females 15-19 years (971.6/100,000) followed by the 20-24 group (914.9/100,000) which represents an inversion from 1989/90 when the highest rate occurred among the 20-24 year old females followed by the 15-19 year old females.[1,4] It seems that the disease is moving to younger females with time.

Geographic Distribution of Reported Genital Chlamydia in Canada (Figure 3).

Figure 3: Reported Genital Chlamydia Rates in Canada by Province/Territory and Sex, 1997



Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

- Since becoming nationally reportable, the highest incidence of genital chlamydia has consistently been found in the Northwest Territories (1547.5/100,000, 13 times the national rate in 1997[1]). This distribution may change as the Northwest Territories become two territories in 1999.

- The lowest rates in Canada were found in the Atlantic provinces, particularly Newfoundland (59.4/100,000)[1].

Issues in Chlamydia Control

The disproportionately high incidence of chlamydia in young females in Canada is cause for great concern, especially when considering estimates that approximately 70% of chlamydia cases in women are asymptomatic, and, as a result, largely undiagnosed[5]. Untreated chlamydia infections in females can lead to pelvic inflammatory disease (PID), ectopic pregnancy and/or infertility. The high female:male ratio in the 15-19 year age group suggests that even though health authorities may be missing a large number of female cases, it is likely that we are missing even more males. Newer, non-invasive (e.g. urine) testing techniques for chlamydia are expected to increase the number of tests done as the discomfort of the swab test, particularly for males, is avoided. Additionally, first-void urine samples are easier for physicians to collect than an urethral swab and more specimens can be collected in less time than previously. British Columbia has reported that in 1998, switching to these techniques has increased the number of tests done by 25%.[6] An increase in screening tests done is expected to increase the number of new cases found.

A recent study in Manitoba[7] examined the trends in chlamydia incidence in Winnipeg using Wasserheit and Aral's (1996) dynamic topology of sexually transmitted disease model[8]. This model suggests that chlamydia has responded to control programs and evolved to the stage it is now in, characterized by concentration in urban core groups with a high rate of partner change and generally lower socioeconomic status. This evolution has implications for new control approaches that could focus on the marginalized populations of these core areas and, perhaps, include social network tracing techniques in with existing sexual network tracing. Additionally, the use of newly recommended single dose of oral azithromycin therapy for chlamydia is expected to increase adherence among traditionally less-compliant groups.

Chlamydia control, a major public health concern especially in the young, has become even more important as a result of recent studies indicating that having an STD increases the transmission and acquisition of HIV infection.[9-15]

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Gonorrhea in Canada

Introduction

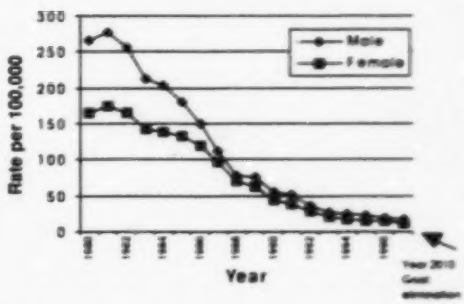
Gonorrhea is the second most commonly reported bacterial STD in Canada[1]. If untreated or under-treated it may have serious consequences such as pelvic inflammatory disease (PID), chronic pelvic pain, tubal infertility and ectopic pregnancy [2]. Gonorrhea infections, as well as other STDs, are markers or cofactors for transmission of HIV. The underestimation of gonorrhea incidence is multi-factorial:

- Most women (70%-80%) with gonorrhea have no clinical symptoms. Cases often go undetected.
- Asymptomatic persons are inadequately screened.
- Some cases are clinically treated without confirmatory laboratory tests and are not reported.
- Poor quality specimens do not allow for the proper identification of *Neisseria gonorrhea*.
- Some laboratories do not report positive tests to their public health authorities[3].

Rate of Gonorrhea in Canada is Steadily Declining

The disease still exists even if it has declined over 14-fold since 1980. At that time, the reported rate was 219.8 per 100,000 population compared to 14.9 per 100,000 population in 1997[4]. This dramatic decline has been attributed to control programs involving diagnostic services, contact tracing and effective treatment.

Figure 1: Reported Gonorrhea in Canada, 1980 to 1997



Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999

Gonorrhea by Province/Territory

- The rate of gonococcal infection varies among provinces. In 1997, rates for Quebec, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland, Alberta and British Columbia, were below the national average of 14.7 per 100,000. Although the incidence rate of gonorrhea among four of these provinces had increased from 1996 to 1997 [4].

- Conversely, the rates for Manitoba and Northwest Territories were three and fifteen times the national average respectively. The rate for Northwest Territories (222.1 per 100,000 population) was the highest in the country and had increased by 18% in 1997 compared to 1996. [4]

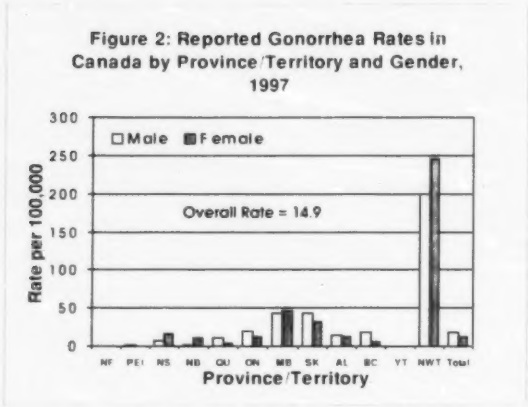


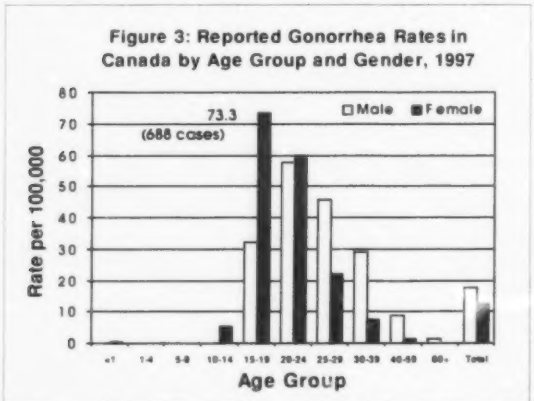
Figure 2: Reported Gonorrhea Rates in Canada by Province/Territory and Gender, 1997
Male
Female
Overall Rate = 14.9
Rate per 100,000
Province/Territory
NF PEI NS NB QU ON MB SK AL BC YT NWT Total

Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999

Rate in Young Canadians Remain High

In 1997, almost half of all reported cases of gonorrhea in Canada were among the 15-24 year olds, followed by the 25-29 year olds [4]. This trend has remained unchanged for years.

Prior to 1989, the peak incidence for Canadian women was in the 20-24 year age group. Since then, females in the 15-19 year age group have replaced males for having the highest reported incidence rate. In 1997, the highest reported rate of gonorrhea (73.3 per 100,000 population) in Canada was in this group of young females. Although this rate was 15% lower than the rate in 1996, it was still five times the national rate [4].



Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999

Aboriginal Populations in Canada are at Higher Risk

- In general, high reported case rates occur in first nations communities - large social disparities and access to health care being major issues [1].

- In Quebec a total of 556 gonorrhea cases were reported in 1997, representing an incidence rate of 7.5 per 100,000 population. For the same year, the Nunavik region had reported 23 cases or an incidence rate of 236.3 per 100,000 population: this is 31 times the incidence rate of the province [5].

Gonorrhea is Developing Resistance to Current Therapy

- According to the National Laboratory for STD (NLSTD), the number of resistant *N. gonorrhoeae* (NG) strains among reported cases are increasing in Canada. In 1996, 120 cases of penicillin-resistant NG, 102 cases of both penicillin and tetracycline-resistant NG, and 638 cases of tetracycline-resistant NG were reported [4], representing 9.4%, 8% and 49.8 % of all isolates tested respectively.

- Since 1992, resistance to tetracycline (TRNG) has been the predominant type.

- From 1989 to 1996, of the specimen tested at the NLSTD, the number of *N. gonorrhoeae* isolates with reduced susceptibility to ciprofloxacin had increased from 0.1% to 3.6%.

Issues in Gonorrhea Control

In 1996, Laboratory Center for Disease Control (LCDC), with the Advisory Committee and the Expert Working Group, identified elimination of locally transmitted *N. gonorrhoeae* by the year 2010 as the Canadian goal for gonorrhea. To reach this goal, control strategies and effort would need to further emphasize screening,

accurate diagnostic, appropriate treatment, partner notification and health education programs, and targeted research.[6]

In spite of the significant drop of gonorrhea infection, the number of cases reported remain high, especially in some aboriginal communities, among adolescents and young adults between the ages of 15 and 24 years. Control of gonorrhea, as well as other STDs, is likely to improve in jurisdictions and vulnerable groups with high incidence rate if appropriate attention and resources are given.

For screening or diagnosis, nucleic acid amplification tests are available and can be performed on urine specimens. This represents an advantage for hard to reach populations such as street youth and sex trade workers, and isolated communities with limited laboratory resources. Culture is still recommended as the only standardized method to determine the profile of antibiotic resistance of *N. gonorrhoeae*. It is important to monitor antibiotic resistance in order to make optimal treatment recommendations.

Treatment for gonorrhea is simple and is based on a single dose of antibiotic to improve treatment compliance. Urethral, endocervical, rectal and pharyngeal infections should be treated using a single dose of antibiotic such as cefixime, ceftriaxone, ciprofloxacin or ofloxacin[7]. Considering that 20%-30% of symptomatic men and 30%-50% of women infected with gonorrhea are also infected with chlamydia [8] and that females with co-infections are more likely to develop PID than those with a single infection, the Canadian STD Guidelines, recommend that all patients treated for gonorrhea also be treated for chlamydia [6,7]. When chlamydia infection alone is suspected, treatment should be for chlamydia only.

Many STD patients are part of core groups with high transmission rates. This includes people who travel in endemic countries, have multiple sexual partners, men having sex with men, sex trade workers, and more vulnerable groups such as street involved youth and injection drug users. Education, partner notification and social/sexual network analyses should be a priority to slow down the transmission of gonorrhea and to eliminate this disease in these populations.

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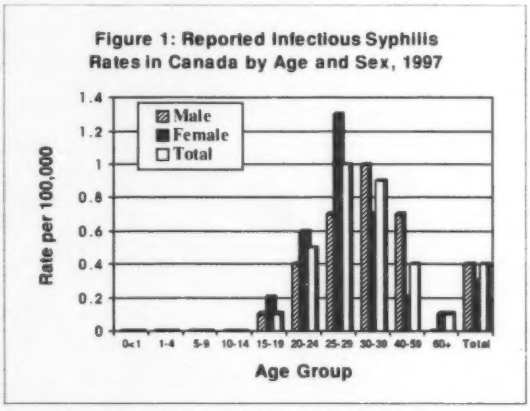
Syphilis in Canada: Elimination on the Horizon?

Syphilis, a sexually transmitted infection, is classified into stages that reflect the degree of infectivity and progression of the disease: primary, secondary, early latent (asymptomatic syphilis ≤ 1 year), late latent (asymptomatic syphilis > 1 year), and tertiary. Untreated primary syphilis can progress to the tertiary stage when the bacteria invade the cardiovascular, nervous and musculoskeletal systems, eyes, and liver. Infection during pregnancy can lead to miscarriage, stillbirth, prematurity and congenital syphilis.

Before the availability of penicillin, syphilis was a significant cause of cardiovascular/neuropsychiatric disorders and blindness. However, transmission and disease progression can be effectively aborted with penicillin. With the arrival of HIV in the 1980's, syphilis took on new importance. It increases sexual transmission of HIV by six- to seven-fold[1], and neurosyphilis in HIV-infected patients are particularly difficult to treat. Recent evidence has shown that early detection and treatment of STDs can have a major impact on the sexual transmission of HIV[2-9]. Because of this synergy[10], syphilis control can have a significant impact on the HIV epidemic in Canada.

Gender and Age (Fig. 1)[11]

In 1997, the reported infectious syphilis (primary, secondary and early latent) gender ratio was 1.4M:1F. The peak incidence was noted in males in their 30's, in contrast to late 20's in females.



Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

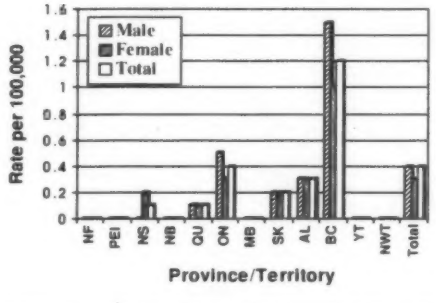
Geographic distribution (Fig. 2)[11]

In 1997, four provinces and two territories reported no infectious syphilis cases and all provinces/territories except British Columbia had reached the Year 2000 National Goal of <0.5 per 100,000 population. Infectious syphilis had been on the decline since 1985 in B.C., with rates dropping down to ≤ 0.5 per 100,000 population

(<20 cases/year) from 1993 to 1996. In mid-1997, a syphilis outbreak associated with the sex trade in downtown Vancouver began[12]. The rate rose steeply to 1.2/100,000 population (48 cases) - the highest in the country. Despite extraordinary efforts by BCCDC staff, this outbreak is continuing, with preliminary rate in 1998 reaching 2.9/100,000 population[13] (114 cases).

In 1997, all provinces/territories except British Columbia had reached the Year 2000 National Goal of no reported cases of congenital syphilis. B.C. reported the only 2 cases in all of Canada[11,12].

Figure 2: Reported Infectious Syphilis Rates in Canada by Province and Sex, 1997

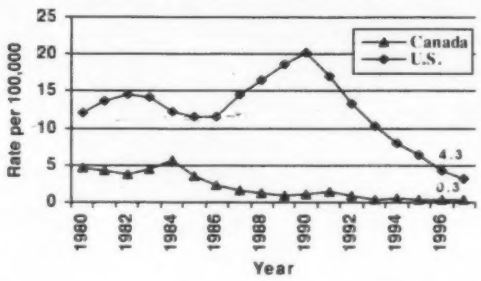


Source: Bureau of HIV/AIDS, STD and TB, LCDC, Health Canada, May 1999.

Trends (Figure 3)[11]

The incidence of syphilis in Canada has been decreasing since the 1940's. This downward trend continued in 1997, with a total of 76 cases of primary and secondary syphilis being reported - a rate of 0.3 per 100,000 population[11]. This decline presents a window of opportunity to eliminate endemic transmission of syphilis in Canada. Despite a rate ten times (8,550 cases and a rate of 3.2 per 100,000 population) that of Canada's, United States is already embarking on such an endeavour[14].

Figure 3: Reported Early Symptomatic (primary and secondary) Syphilis Rates in Canada and the United States, 1980 to 1997



Source: Sexually Transmitted Disease Surveillance, 1997, Centers for Disease Control and Prevention, 1998.

Can Syphilis Be Eliminated In Canada ?

A number of factors favour the possibility of syphilis elimination. The slow growth rate (division time 33h) and the long incubation period (10-90 days) provide sufficient time to identify recent sexual contacts, allowing preventive therapy before development of clinical diseases[15]. Cheap and effective therapy for treatment and transmission interruption is achievable with penicillin. For those who are allergic to penicillin, treatment trials with azithromycin are underway and preliminary results are encouraging[16,17]. Clinically significant antimicrobial resistance has not surfaced and there are no animal reservoirs

Despite the decreasing incidence of syphilis in Canada, we have to sustain our control effort and be vigilant about the resurgence of syphilis, such as the current outbreak in British Columbia. Enhanced surveillance, screening, prevention, diagnosis and management programs must be developed to preventing such re-emergence in major cities, especially among the disenfranchised[18]. We must improve our capacity to respond to outbreaks quickly at the regional, provincial, territorial and national levels.

As the number of domestic cases in Canada dwindles, imported syphilis will become increasingly important. More prevention efforts should be targeted at travellers and immigrants as

an estimated 12 million syphilis cases occur worldwide[19].

Historically, only a handful of locally transmitted infectious diseases (eg. malaria, smallpox, polio) had been eliminated in Canada.. A sexually transmitted disease has never been eliminated. We are at a crossroad. Syphilis elimination initiative would not only reduce the individual and societal costs of syphilis, it would also strengthen the public health infrastructure that helps control diseases like HIV, hepatitis C and tuberculosis in the same marginalized populations. With sufficient resources, this can become a reality. The timing is ripe to consider such a historic initiative in Canada.

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